UNESCO ARCHIVES

A WINDOW OPEN ON THE WORLD

The UNESCO Courier

APRIL 1964 (17TH YEAR) - PRICE 1/-STG. (U.K.) - 30 CENTS (CANADA) - 0.70 F (FRANCE)

WORLD HEALTH DAY

ILO

UPSIDE-DOWN WORLD

These two children are probably having the time of their lives but many grown-ups would probably look askance at such behaviour. For an article on a famous woman who certainly did not, see article page 16.

The UNESCO Courier

APRIL 1964
17TH YEAR

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COVER PHOTO

Eskimo children in particular have benefited from the health services set up in recent years in the Far North of Canada (see page 12). In other Arctic territories —Alaska, Greenland, Scandinavia and Siberia — health services are also being expanded, and research into health problems in these areas is being co-ordinated by the World Health Organization.

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TUBERCULOSIS

Still 3 million deaths a year

"At least 15 million people suffer from infectious tuberculosis today. The disease still claims more than three million lives each year... in nearly all economically-developed countries, the number of sufferers has not declined as nearly as rapidly as the number of deaths, and tuberculosis remains a grave problem. In the world as a whole, between two and three million new cases occur each year..." These warning words by Dr. M.G. Candau, Director-General of the World Health Organization, explain why the theme chosen for World Health Day 1964 (April 7) is "No Truce for Tuberculosis". On the following pages The Unesco Courier retraces the long history of tuberculosis and the efforts to find curative and preventative medicines. Also described are the powerful new drugs and infection control methods which can be used to defeat tuberculosis and eliminate it as a public health problem. Because, as Dr. Candau has also pointed out, "for the first time in man's history we now possess effective weapons with which to fight tuberculosis."

Five years ago Tunisian doctors met in the Public Health Office, one of the government ministries in the Kasbah at Tunis (right) to plan a war on tuberculosis. As a prologue to this national campaign, a pilot experiment into the use of drugs for preventative treatment was carried out jointly by the Tunisian Government and WHO. The test zone was the Djebel Lahmar (below) a community of 25,000 people whose homes are one-storey mud dwellings grouped on the outskirts of Tunis.

Photos © Paul Almasy, Paris

THE BATTLE OF TUNISIA

In Tunis, one morning in January 1959 an all-out war was declared on tuberculosis. It all started when the authorities of the small town of Ksar Ellal, near Sousse, found that the number of sick was increasing daily among the 10,000 inhabitants of the commune, most of whom were weavers.

An SOS went out by letter and telegram to the Government Public Health Office. A health team was sent to investigate.

When the X-ray vans arrived in Ksar Ellal they were besieged. In record time 5,000 people were examined. The results were alarming: a tuberculosis prevalence of 8%, or more than ten times present-day figures in Europe.

In some of the weavers' families at Ksar Ellal, tuberculosis had existed for generations. Not through heredity, of course, but simply because it was inevitable in such overcrowded living conditions and dusty working environment that sick parents should pass the disease on to healthy children in their daily contacts. And if tuberculosis prevalence was 8% at Ksar Ellal, what, the Health Office wondered, would it be elsewhere?

With the aid of technical advisers from WHO, it was decided to launch a nation-wide campaign against tuberculosis. The Government offered completely free treatment to all tuberculosis sufferers, and earmarked a special budget of 95,000 dinars (£80,000) for the campaign. The Governorate of Sousse (460,000 people) was chosen as the starting place because it had the next largest population to Tunis itself.

Wherever they went, the teams worked according to three basic principles: case-finding, supervised treatment, and protection through BCG vaccination. Lorries laden with X-ray equipment set out along the dusty roads, while the organizers scoured the countryside in small cars. The teams were warmly welcomed everywhere. In the Governorate of Sousse alone, almost 95% of the popula-

CONT'D ON NEXT PAGE

Tunisia's health authorities began their anti-tuberculosis campaign in the province of Sousse —the most heavily populated area after Tunis itself. The campaign will move south to cover areas around Kairoun and Gafsa, near where this photo was taken during the annual "sheep festival " in April. Here, villagers watch local rider performing a traditional mounted "fantasia".

TUBERCULOSIS *(Cont'd)*

Passport to health

tion turned out. There was no need for posters. But to ensure full coverage, it was decided to carry out a census by family. This took up precious time, but only when it was completed could the real work begin. Once the administrative controls had been carried out, the pace quickened.

Here, as throughout this hard-fought campaign, vaccinators and casefinders worked side by side. Radiological examinations for everyone over five years of age. Next, please! A tuberculin test was administered to all the under-twenties. Next, please! Those who had been given the test came back three days later—BCG vaccination for the negative reactors. For all suspects there were medical examinations followed by INH (isoniazid) treatment for the mild cases, and hospital for the more serious ones. When everyone had been examined in the village or district, the diagnostic teams packed up and went off to start the same work elsewhere, returning three months later to check up on the sick.

The work went on without a break; the teams relayed each other from sunrise to sunset. All sorts of problems arose. Some were relatively simple—like the transport of equipment and its maintenance. Hermetically sealed thermos containers of wood, cork, and zinc were rigged up on the spot to protect tuberculin and BCG which quickly deteriorate under the blazing sun. Trained technicians were needed to maintain and repair the 11 X-ray microphotography machines and the generators. A radiological engineer sent by WHO to co-ordinate this work has already trained 13 Tunisian operators. Others now being trained will shortly form the nucleus of a central technical service being set up by the Tunisian Government.

To carry out their ambitious programme, the Tunisian teams have had to adapt themselves to the most unexpected situations. In Moknine and Kalas Kebira—towns deeply attached to religious traditions—radiophotography had to be carried out at night, sometimes until two in the morning, because women were not permitted out of doors before sunset. During Ramadan, worried heads of families were afraid that the tuberculin-test injection might break the fast, and the religious authorities had to be brought in to convince them that it is permissible.

Elsewhere, the census ran up against other unforeseen difficulties. At Gabes, with its 400,000 palm trees, the oasis encircles the town in a vast pincer-movement. There it was found that four sheikdoms overlapped. After endless working sessions the exact boundaries were defined, thus permitting a census of the inhabitants, which was carried out street by street in the town, and hut by hut in the oasis. The absence of surnames did not make matters any easier when making sure that everyone, without exception, was called for examination, but that no one was called twice.

But problems of case-finding were nothing compared to those of treatment. One difficulty has been the distances to be covered. The *assistants sanitaires* ("health assistants") travel by car from sheikdom to sheikdom, distributing INH tablets, checking the progress of treatment, encouraging those who seem to be faltering.

Health workers measure mothers and children (right) and take identity photos (below) for records and the eventual issue of a family health card. The operation was carried out jointly by the Tunisian Health Ministry and UNICEF. Since 1959, BCG vaccination against tuberculosis has been compulsory for all Tunisians under 20, and children are not allowed in school unless they have been vaccinated.

Photos © Paul Almasy, Paris

At regular intervals the population is asked to gather at control centres. The crowd thronging round the doors is sometimes too large to handle easily. At first there may be about 400 people waiting, but soon these may increase to 600, 700, or even 1,000. Then the health team has to organize and process them as best it can.

To conquer tuberculosis in Tunisia also means to build new houses. Parents, children, uncles, aunts, and grandparents are frequently crowded into a living-space of 15 square metres. Even then the palm-covered huts of the farm labourers at the Gabes oasis are certainly preferable to the caves of Old Matmatta, 15 km to the south. Here the steppe country is broken up into fantastic canyons; the soil grows progressively stonier and the water scarcer.

But the people who are living in holes in the mountain will soon be evacuated. They will be resettled—some 15,000 or 20,000 of them—in the town of New Matmatta, which has been specially built for them near a dam in the plain, 10 km away. New Matmatta has something even better than new houses—a fountain with running water all day long. Here water is vital. When you turn your back on Gabes, the desert is quite near, just at the end of the road, its presence indicated by the spectacular sunsets.

The campaign organizers are constantly haunted by this problem: how can someone who earns a bare living be expected to go to hospital when it means leaving his family in even more tragic poverty? If he is a farm labourer he may earn 6 dinars a month, plus 2 kilos of semolina—6 dinars a month when a loaf costs 50 millimes, a kilo of fish 400 millimes, and meat is 600 or 700 millimes a kilo (about one-tenth of his monthly income).

An effort is being made to solve this problem. Special committees have been formed to co-ordinate the work and share out the resources. All the needy are aided, all patients with active tuberculosis who earn less than 180 dinars (£150) a year receive a monthly ration of flour, corn, maize, millet, powdered milk, beans, and cheese—a total of 16 kilos per patient per month, plus 8 kilos for each dependent child.

Thus, between July and September 1963, 336 tons of food were distributed to tuberculosis patients and their children. Today these food supplies serve as an incentive for the patients, for if it is found that they are not following the prescribed treatment regularly, the extra rations are cut off.

Short-term hospitalization can have a dual effect. The patient is encouraged in healthy habits and he gains in self-respect. He undergoes a sort of transformation. He will also have become accustomed to taking his INH tablets at a set time. For these patients the hospital is a kind of school. The normal period of hospitalization is two months, but with difficult cases it is extended, the date of discharge being postponed as long as possible.

Tunisia is the only North African country without a sanatorium. As for the hospitals, the Tunisians have

CONT'D ON NEXT PAGE

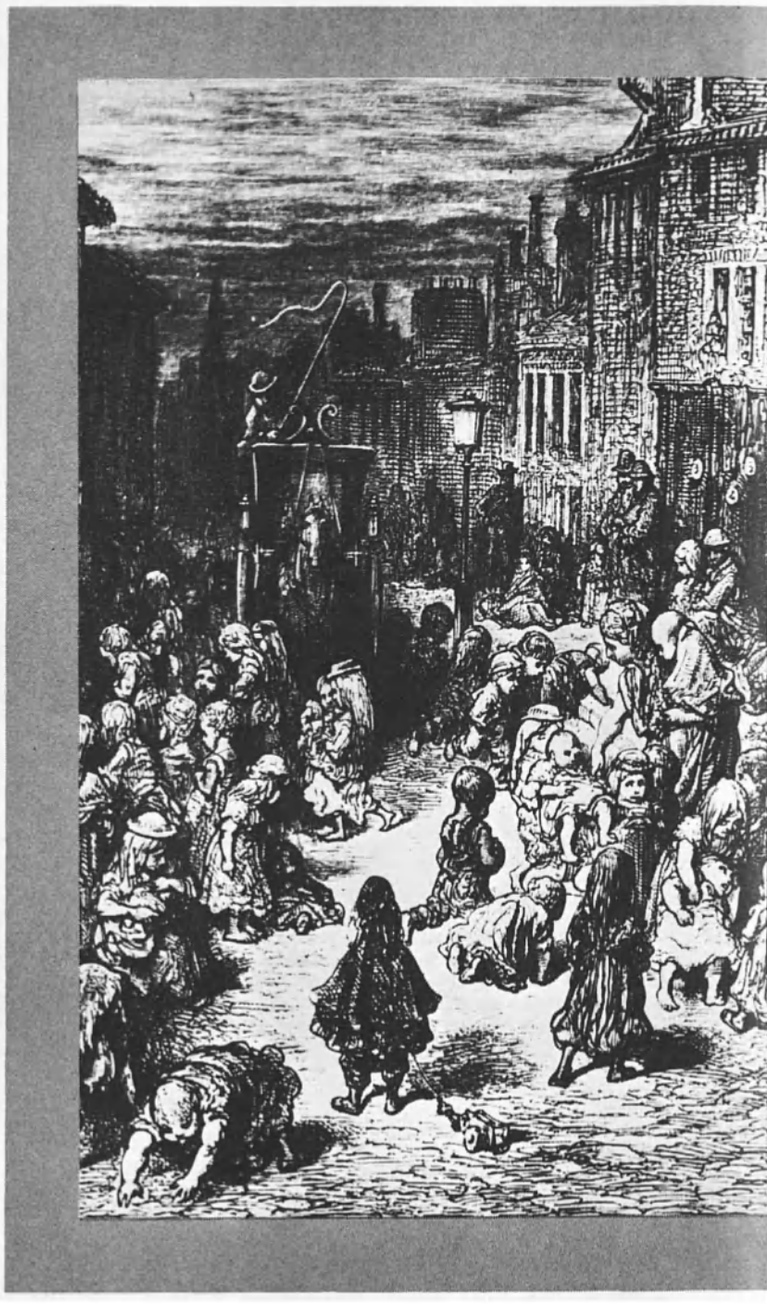
Door-to-door medical check-up

made an enormous effort, providing 1,500 new beds at 1,000 dinars a bed over the last 15 years. As a result, the country's hospitals now have some 2,300 beds reserved for these patients.

The first Tunisian medical faculty has just opened its doors. It is anticipated that it will be able to admit 70 students a year, most of them on State scholarships. That there is an urgent need for trained personnel is confirmed by the results of the anti-tuberculosis campaign in the Sousse Governorate.

At the time of the census, there was a population of 460,395. Of these, 419,661 were examined, and 341,630 X-rayed. The number of cases detected was 22,812, including 10,700 active cases (this means a tuberculosis prevalence of 2.6 per cent.). Of these cases 8,800 have now been "stabilized" or cured. But how many new cases have occurred since? How many will occur in future and need treatment?

A pilot experiment directed by a joint WHO Tunisian Government commission preceded the antituberculosis campaign. Its object was to study the use of drugs to protect currently healthy persons from tuberculosis. The test zone was the Djebel Lahmar, a community on the outskirts of Tunis. Here some 25,000 people live in one-storey mud dwellings, usually with five or six rooms grouped round a courtyard, and one family to each room. The windows are small, ventilation is poor, and sanitary facilities are rudimentary.



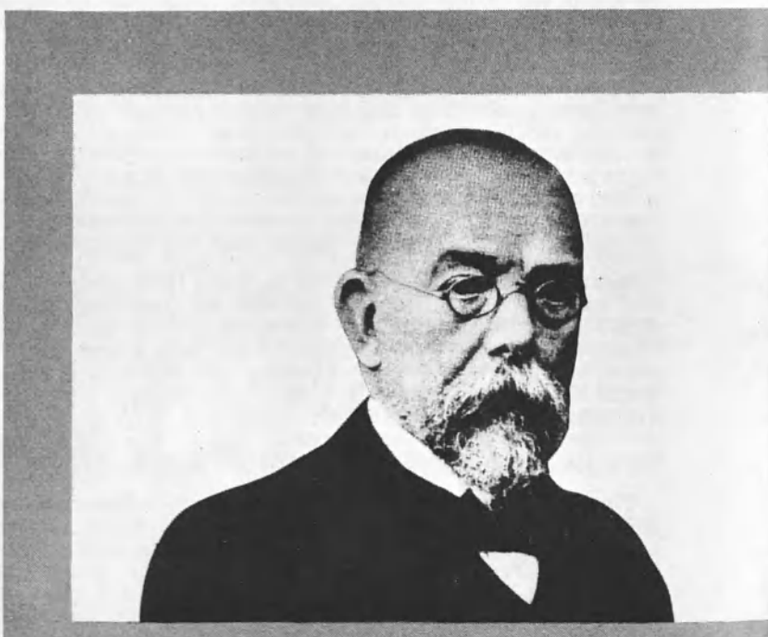
THE inhabitants are nevertheless concerned about their health, and responded willingly when the Sheik asked all of them, except the under-twos and those already vaccinated with BCG, to take part in this study of the prophylactic value of INH.

The procedure was the same as in the antituberculosis campaign. A house-to-house census was carried out. As there was no civil registration, serial numbers were painted on the walls. Then the population (24,505 persons, according to the census) was divided into two groups. Those in the first group were given INH tablets, while those in the second group served as controls. (Naturally actual tuberculosis sufferers in both groups were given curative treatment.)

The people were required to take the INH tablets regularly for one year. All were supervised at regular intervals by health assistants. However, in a surprise check-up, it was found that four-fifths of those examined had not taken their medicine on that particular day.

To improve the supervision of non-hospitalized patients, the medical assistants are now carrying out more of these surprise check-ups, visiting a number of houses each day. It may thus be possible to prevent patients from stopping the treatment because they cannot be bothered to make the effort. Both Tunisian experts and WHO advisers consider that the main hope lies in continuity of action. After the campaign in Sousse, it will be the turn of Kairouan, and Gabes. But a campaign is a transitory thing and some provision must be made for the years to come.

There is another way—the protection of the young. This has Government support: a law passed in 1959 made BCG vaccination compulsory for everyone under 20 with a negative tuberculin test, and its application in progressing with the development of the campaign. Mothers now know that they cannot send their children to school unless their Family Health Card shows that they have been vaccinated. Soon, throughout Tunisia, this little document will be a veritable "passport to health."



WHO

Radio Times, Hulton Picture Library

Left, a London slum, as the well-known artist, Gustav Doré, depicted it in 1874. Tuberculosis raged everywhere in 19th-century Europe. Towns became overcrowded and slums proliferated as people poured into the first industrial cities. At the beginning of the 19th century one death in four was due to tuberculosis. Tuberculosis was not a new disease; it had been well known in the ancient world, but probably reached its worst period in Europe during the 18th century.

ROBERT KOCH'S GREAT DISCOVERY

In 1882, the German scientist, Robert Koch, succeeded in identifying for the first time the agent of tuberculosis: a slender rod between three and four thousandths of a millimetre in length. Then Koch succeeded in producing cultures of the bacillus and in transmitting tuberculosis to animals. He demonstrated conclusively that the bacillus was the specific organism of tuberculosis. Koch later identified the comma bacillus that is responsible for cholera. In 1905 he was awarded the Nobel prize for medicine.

March 24, 1882

A MOMENTOUS LOOK INTO THE MICROSCOPE

Tuberculosis was known and studied by the physicians of the ancient world. Four thousand years ago the famous Code of Hammurabbi, King of Babylonia, mentions "the wasting disease." An Egyptian papyrus written in 1,600 B.C. gives the first description of chest diseases. Excavations in one area of Egypt have unearthed so many bodies with tuberculous lesions that some specialists believe it was the site of a large sanatorium.

The disease, in fact, goes back much further still, as we may judge by the skeleton of a young man found in a neolithic burial ground near Heidelberg: its fourth and fifth dorsal vertebrae were fused together showing that tuberculosis of the spine was already afflicting prehistoric man some 6,000 years ago.

Tuberculosis was described clinically by Hippocrates, "the father of medicine" (about 460-370 B.C.), who called it "phthisis" (from a Greek verb meaning "to dry up"), and it was known either by this name or as "consumption," until the 19th century.

Remedies for the disease were described by Galen (about 130-200 A.D.), another famous name in ancient medicine. Avicenna (980-1034), "prince of physicians" and author of "The Canon of Medicine," considered that the disease evolved in three stages, and another doctor, Ferrari of Pavia, wrote a "Treatise on Phthisis."

The painter Botticelli lost his favourite model, Simonetta Catarina Vespucci, a beautiful Florentine, carried off by phthisis at the age of 16. He made a tender portrayal of her hollow cheeks, frail neck and sloping shoulders.

The typical Romantic of the 19th century was emaciated, had flushed cheeks, and died spitting blood at the age of 30. This was the period when George Sand and the consumptive Chopin fled from Majorca, and a Barcelona hotel-keeper demanded compensation for the musician's bed after the police had ordered it to be burnt. The disease inspired Byron, who declared that he would like to be carried

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Two allies: poverty and war

off by a consumption so that all the ladies would say how interesting he looked while dying.

Edgar Allan Poe was haunted by the memory of his wife, Virginia, who died of consumption at the age of 24. Dumas wrote in his memoirs that "everyone was consumptive—and especially the poets—it was good form to spit blood from sheer emotion." Marie Bashkirtseff, the famous nineteenth century painter, noted: ". . . I never stop coughing, but miraculously it does not make me ugly—on the contrary, it gives me a languid air that is most becoming."

Tuberculosis—as the disease was beginning to be called—raged everywhere in 19th century Europe. Towns became overcrowded and slums proliferated as people poured into the first industrial cities. Children of 13 did the work of adults. Towards the middle of the century, the death-rate from the disease was as high as 500 per 100,000 in some places. Tuberculosis had become a social disease. It was to remain one as long as there was no improvement in economic and social conditions, declining only when the social benefits of industrialization and technical progress ultimately began to be felt. In times of war, however, tuberculosis found allies in stress, malnutrition, and poor housing conditions and at once renewed its attacks.

Soon after the First World War, two French scientists, Albert Calmette and Camille Guérin, gave the world the first effective weapon against tuberculosis : BCG vaccine (Bacillus Calmette-Guérin). Today, hundreds of millions of doses of BCG have been administered throughout the world. Right, Camille Guérin at the Institut Pasteur, Paris in 1960, a year before his death. Photo in the background is of Calmette (1863-1933).

WHO, René Caloz

After 270 unsuccessful attempts, a German scientist called Robert Koch succeeded in identifying the agent of tuberculosis: a slender rod between three-and four-thousandths of a millimetre in length.

When he discovered the bacillus that bears his name, Robert Koch was 39 years old.

Koch began to be interested in bacteria when a country doctor in Silesia, but did not remain in the provinces for long once his brilliant researches on the anthrax bacillus had brought him to the notice of his contemporaries, the scientists Cohn and Cohnheim.

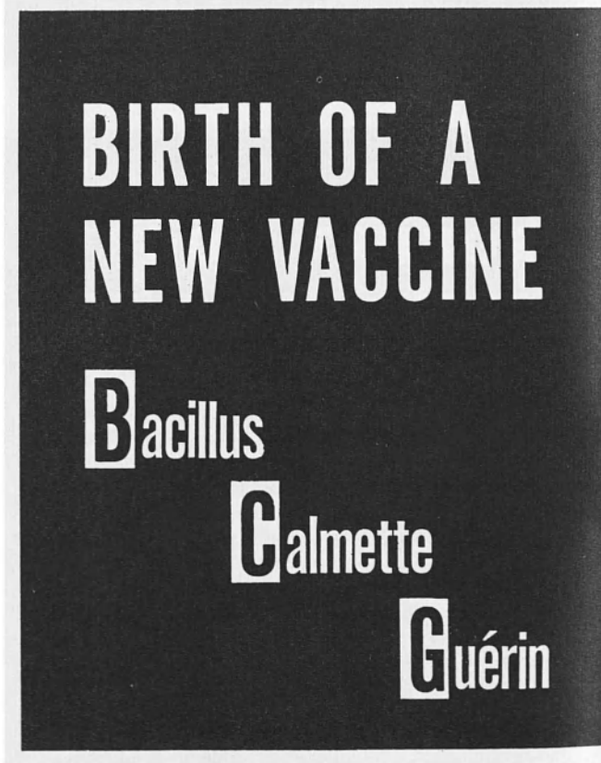
"Koch will again astonish us with his discoveries," one of them predicted. And both his sponsors used their influence to secure him a post with the Imperial Health Office in Berlin. Koch brought with him the microscope his wife had given him for his 28th birthday.

Day after day he sought the best medium for the culture of microbes, and perfected the techniques for studying them. He showed the same persistence in his attempts to isolate the bacillus of tuberculosis, which was then the most widespread disease in the western world.

He spent most of his time shut up in his laboratory at the Charity Hospital, Berlin. The door was closed to everybody except his coworkers and his wife. His only other companions were the guinea-pigs, rabbits, and mice needed for his experiments.

He finally succeeded in isolating the bacillus, a micro-organism that was not only hard to cultivate, but hard to see. It was particularly difficult to stain, since the colouring matter had to be left to act for a period of 12-24 hours. He therefore borrowed a technique from the dyers, that of using alkali with the dye. Added to methylene blue, the alkali acted as a mordant enabling the dye to penetrate the bacillus.

At last the great day came. On March 24 1882, in a crowded room at the headquarters of the Berlin Phthisiological Society, the young man with the pointed beard addressed some 80 fellow-scientists. Robert Koch explained his discovery in a matter-of-fact way, as if he were presenting some routine paper. He told them all about the culture technique, the bacillus, and the characteristics of the lesions. Microscopes stood waiting on the desk in front of him. One by one the audience came up, peered into them, and saw the slender rods for themselves. There was a dead silence. Not a single voice was raised in opposition to Koch's findings. From that moment everyone knew that the origin and propagation of tuberculosis were no longer a mystery. It was not a hereditary, but a communicable, disease.



Two French scientists, Albert Calmette and Camille Guérin, gave the world the first effective weapon against tuberculosis.

Léon-Charles-Albert Calmette, was a former naval doctor who took up research on bacteriology, first becoming Director of the Pasteur Institute at Lille, then Sub-Director of the main Pasteur Institute at Paris. With his closest collaborator, the veterinarian Camille Guérin, he had published a "Contribution to the study of the vaccination of bovids against tuberculosis" shortly before the First World War.

In it the two scientists described how they had cultivated the tubercle bacillus on potato boiled in glycerinated beef bile, using a virulent strain of bovine origin. After about three weeks the bacillus was found to have lost some of its virulence. But it was not until years later, after the operation had been repeated more than 200 times, that Calmette and Guerin succeeded in evolving a new kind of bacillus, harmless, yet capable of conferring a state of immunity when administered by vaccination. Animals inoculated with this bile-cultivated vaccine proved resistant to tuberculous infection.

Shortly after the end of the Second World War, Calmette felt that the time had come to test the effects of this vaccine in man.

On July 1 1921, in a Parisian apartment, a baby received three 6-milligram doses of Bacillus Calmette-Guérin (BCG), administered orally. Since both the child's mother and the grandmother who was bringing him up were suffering from tuberculosis, there was a good chance that he would become infected. Yet six months later he was developing normally and healthily.

Then the vaccine was tried out on a larger scale: 664 babies in the crèche run Dr Weill Hallé, pædiatrician at the Paris Hospital of Charity, were vaccinated without any ill effects.

Henceforth Calmette was considered as the leading authority on tuberculosis. He published a paper in the *Journal de l'Académie de Médecine*, entitled "Trial of a vaccine against tuberculosis infection" in which he summed up 20 years' work in a few pages. The vaccine began to be widely used. The Pasteur Institute was authorized to send ampoules of BCG abroad, and vaccination were carried out in Barcelona, Montevideo and Rio de Janeiro; in Argentina, Cuba, and Poland; in Dakar, Saigon and Sao Paulo; and in the Balkans.

Nevertheless, there were some dissenting voices. At the Trudeau Sanatorium, Saranac, N. Y., Dr Petroff asserted that the vaccine had retained pathogenic qualities. In Switzerland, some authorities pronounced it dangerous. In Vienna, Dr Kraus, Director of the Institute of Serotherapy, forbade the use of BCG in Austria. Even in France, Calmette was attacked.

Nevertheless he went on organizing demonstrations and controlled experiments, and succeeded in turning the tide of opposition. He submitted his case to an international jury of experts, convened by the League of Nations, which concluded that BCG was indeed effective.

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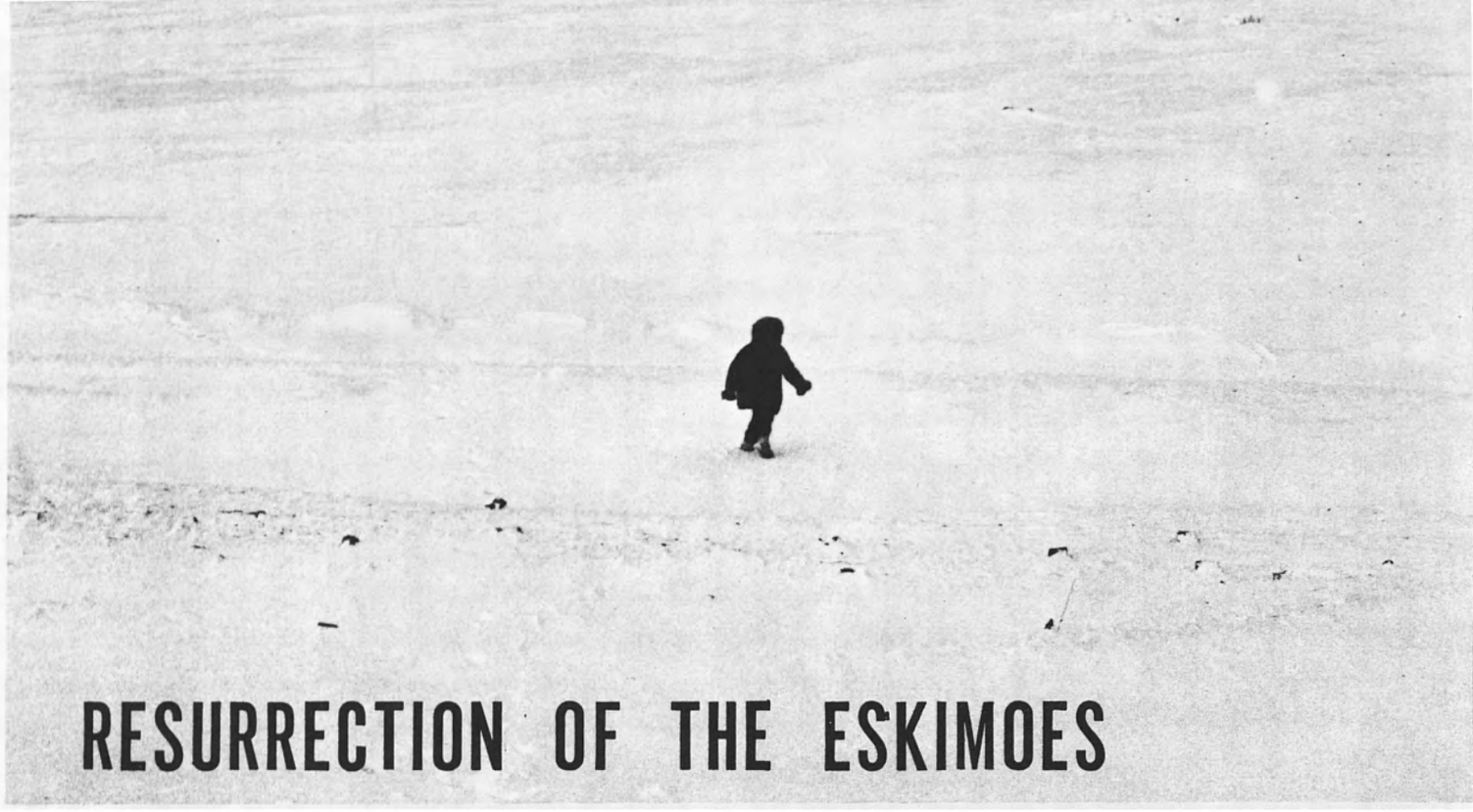

RESURRECTION OF THE ESKIMOES

WHEN the Eskimoes lived alone in the Far North they hardly knew what illness was. But from their first contact with civilization they harvested tuberculosis, then syphilis and later poliomyelitis. Sixty years ago, the Eskimoes were a disappearing race. Today, the trend has been reversed. The Eskimoes seen in these photos, who live in the Far North of Canada, have increased from 7,000 to over 12,000 in the past 15 years. One reason is the health network—dispensaries, airborne doctors and air ambulances, and preventative services, including tuberculosis case-finding —now woven over great reaches of the Eskimo country.

National Film Board of Canada

ONLY ONE CHILD IN TWO used to survive the first year of life. Now, thanks to better health practices and emergency aid, four children out of five survive.

CHILDREN OF THE ESKIMOES (above and below) were the first to benefit from new health services in the Canadian Far North. To maintain these services for a widely scattered population of about 12,000 Eskimoes costs an average of $2,000 per head annually.

FLYING AMBULANCE lands near a lonely dwelling in Canada's north to pick up an emergency case requiring surgical treatment. Emergency calls arising from accidents and illnesses are answered all the year round and in all weathers.

Photos WHO - Paul Almasy

Victory over calumny and suspicion

Suddenly there was a tragic development. Out of 252 children in Lübeck, Germany, who had been vaccinated with BCG between December 1929 and April 1930, 71 died and 27 fell ill, five of them dangerously so, the cause being a serious tuberculosis infection.

Protests flowed into the Pasteur Institute from all sides. An inquiry was held, and revealed that Calmette's work was not at fault. The Institute issued a statement:

"Either the BCG culture was accidentally infected by a virulent tuberculosis germ from other cultures in the laboratory at Lübeck, or else, through carelessness, flasks or tubes containing virulent tubercle bacilli were unfortunately placed in the same drying-cupboard as the BCG cultures and substituted for them in the preparation of the first vaccine emulsions in January 1930.

" The idea that BCG could suddenly have become virulent after being administered to the children is untenable. There is therefore no doubt that the children in Lübeck received a virulent tuberculosis culture instead of, or mixed with, BCG."

A lawsuit was started. Then German bacteriologists revealed that the conditions in which the BCG strain had been kept in the laboratory were unsatisfactory. A serious mistake had been made. In a culture that had been used in the preparation of the vaccine, BCG was found mixed with virulent bacilli from a strain forwarded to Lübeck by a laboratory in Kiel. It was proved that the tragedy had been caused by a blunder at the Lübeck laboratory. The doctor responsible was sentenced to two years' imprisonment, and Calmette and his Institute were exonerated.

A million small children in all parts of the world had already been vaccinated with BCG. But, as if to exemplify the old saying "If you fling enough mud, some of it is bound to stick," BCG was to be viewed with suspicion for a long time to come.

Today its value is no longer in question. Full recognition finally came in 1948, when 300 delegates from all parts of the world took part in the First International BCG Congress. BCG vaccination is now compulsory in several countries, including France and the U.S.S.R. The vaccine is manufactured by more than 50 laboratories in different parts of the world, from strains supplied by the Pasteur Institute.

By June 1924, Calmette and Guérin had vaccinated 217 children. Today several hundred million doses of BCG have been administered, 150 million of them in campaigns undertaken by WHO and UNICEF in more than 60 countries.

Further indisputable proof of the value of BCG was obtained in a recent intensive trial of the vaccine among 35,000 young people living in highly industrialized communities in Great Britain. There were 80 per cent less cases in those who had received BCG than in those who had not, and this reduction has by now been maintained for more than eight years after vaccination. It has often been argued that the unfavourable sociological and economic conditions and the high exposure to infection found in developing countries would lower the value of BCG. A controlled study in India, supported by WHO, has however recently revealed the same degree of protection as that found in the British trial.

Being economical and easy to apply, BCG vaccination could—if used systematically and continuously over the next few decades—bring about the elimination of tuberculosis as a public health problem in any developing country.

'SUPER-BACILLI' A NEW CHALLENGE TO MEDICINE

One difficulty in large-scale campaigns against tuberculosis using modern drugs in the appearance of tubercle bacilli that are "resistant" to their action. But, as the International Union against Tuberculosis declared recently: "We hear a great deal about the resistance of the bacillus. But not enough is said about another form of resistance: that coming from ignorance, apathy, and lack of interest—in a phrase: the resistance of Man." Immunization, diagnosis and treatment offered on a community-wide scale are nothing but empty gestures if the public is not willing to make full use of these services. There is need for active and continuing co-operation of both the individual and the community.

Doctor and patient have often different points of view. The doctor wants to "follow up" his patient, while the patient tries to keep away from his doctor. Both in the sanatorium and at home, the patient is far from being always co-operative. Despite the serious nature of his illness, there all too often comes a time when he revolts against the tiresome routine of taking his daily quota of drugs.

Even sanatorium patients have been known to throw their pills out of the window. They want to believe that there is no need for further treatment, to think that they are already cured; the truth is that the course of the disease is merely interrupted. They have only one idea in mind: to leave the sanatorium and get home as soon as possible, regain their freedom and resume their normal activities.

When this human weakness is a real problem even under strict hospital routine, then it is not surprising that the discipline of the home-patient, who has to take the drugs daily on his own initiative, easily breaks down.

Human resistance to the discipline of taking potent drugs regularly for a long period means that the tubercle bacillus is subjected to only a half-hearted attack and this gives it the time to mobilize a drug-resistant population. Once this has happened there is no reprieve: the bacillus that has been "immunized" through the patient's negligence produces other bacilli just as impervious to the effect of the drugs to which it is resistant.

Doctors have the greatest difficulty in dealing with these "super-bacilli," which respond only to a few costly drugs that may be dangerous and must therefore be administered under close hospital supervision. To provide such special treatment on a large scale would place an intolerable burden on the strained economies of most of the developing countries.

The consequences of defaulting from treatment are extremely serious: not only does the patient get worse, but he may succeed in spreading drug-resistant bacilli to healthy individuals who, in turn, become untreatable by the normal methods.

Perhaps the only way of dealing with the "resistant" patient is, after all, to supervise him and make sure that he takes the medicine at his home or at the health centre. If drug treatment could be given intermittently, say once a week, instead of daily, medication could be supervised even in developing countries. The Madras Chemotherapy Centre has been investigating this possibility: twice-weekly ambulatory treatment with isoniazid and streptomycin gave the same spectacular results as daily administration of isoniazid and PAS: more than 90 per cent. of advanced cases cured. Stimulated by these unexpected and encouraging findings, the Centre has begun to study the feasibility of a once-weekly regimen.

Applicability on a mass scale, economy, convenience, and reduced toxicity: these are the truly impressive array of advantages offered by the latest possibilities in the treatment of a disease that has plagued mankind since the beginning of history.

Tuberculosis is an international health problem and must be solved on a world-wide basis. Although varying enormously from the large underprivileged areas of the world to the highly industrialized countries, the tuberculosis situation is of serious concern to all.

Even those few countries which are gradually eliminating the problem within their own frontiers cannot hope to be safe as long as tuberculosis is rampant elsewhere. The increasing rapidity and volume of international transport, the migration of workers across national boundaries tend to intensify the risk of infection. Another cause for worry is that as tuberculosis becomes less frequent in a country the natural resistance of the population may be expected gradually to diminish, and this at a time when the anti-tuberculosis services are likely to relax their vigilance. Tuberculosis must be conquered everywhere.

Since it came into being in 1948 the World Health Organization (WHO) has assisted national governments in bringing tuberculosis under control by providing expert advice and teams of specialized personnel.

Under its guidance, mass vaccination with BCG, the first weapon against tuberculosis, has been extended to most parts of the world. However, the very first large-scale vaccination campaigns were launched by the "International Tuberculosis Campaign" which was set up after World War II by the Scandinavian countries to aid nations which had been most seriously ravaged by the disease.

More recently, when effective antituberculosis drugs became available, the rational use of this powerful weapon in the many countries where hospital facilities are limited or non-existent was investigated through special projects.

It is clear that none of the weapons against tuberculosis can be used in exactly the same way in every country. Conditions and resources differ and different strategies have therefore to be developed. To meet this need WHO has co-operated in pilot projects for tuberculosis control in numerous countries.

In all of these activities the United Nations Children's Fund (UNICEF) has been a partner of WHO. With the joint assistance of WHO and UNICEF more than 150 million people have been vaccinated in campaigns in 61 countries, tuberculosis control training centres have been set up in many parts of the world and more recently pilot projects in tuberculosis control for about a third of the world's population have been started.

Another important partner in the world-wide fight against tuberculosis is the International Union against Tuberculosis (IUT). A frequent obstacle to the efforts made by governments to control tuberculosis is a lack of sustained co-operation by individuals and by communities. It is here that the IUT and its constituent voluntary tuberculosis associations can play a decisive part: what governments cannot do national, regional and local associations often can. The Mutual Assistance Programme of the IUT has been designed specifically to supplement the governments' efforts by mobilizing and maintaining nation-wide support.

WHO, Spooner

MASKED & GOWNED AGAINST INFECTION

Stringent precautions against infection are taken in this tuberculosis section of a research laboratory. Staff work in gowns and masks and all items of equipment are coloured red to avoid possible confusion with material from other research sections. Research leading to discovery of drugs with direct action against the tuberculosis bacillus—streptomycin, p-aminosalicylic acid and isoniazid—has sharply reduced mortality rates.

Maria Montessori

A VISION OF MANKIND TRANSFORMED

by Maria Remiddi

In 1947, two years after the end of the Second World War, great interest was awakened in Rome by the announcement that Maria Montessori was to give a talk there on "Education and Peace." For although Maria Montessori had studied in Rome (she held degrees in medicine, biology, philosophy and education) and her first research into the psychological development of small children had been carried out there, she had pursued the rest of her career in foreign countries, opening schools in England, the United States of America, Spain, Denmark, India and the Netherlands. At last she was coming back to Rome, a dignified old lady dressed in black, with a halo of white hair. She had a very quiet voice and spoke so simply that no one could fail to follow her arguments.

She said there was no need to unite the world, for it was united already. In order to develop a peaceable disposition in young children, we must give them their place in this new united, unified world where everyone works for the benefit of his neighbour. For in the world of today nothing comes to us direct from nature in the old, simple way; men must work to bring it to us.

She pointed out that this applied not only to houses, tables, chairs, books, but that even a fruit, which seems the most direct and genuine of nature's gifts, comes to us only because men have tended the tree it grew upon, plucked it and brought it to market.

She went on to say that nothing was easier than to make little children aware of the human kindness which is constantly being expressed in work, for every child meets with such kindness in everyday life. Unconscious kindness, perhaps, but kindness all the same. It helps people a great deal if they realize they have this kindness within them.

Maria Montessori never wrote out her lectures or lessons,

Maria Montessori gave her entire life to education. She worked tirelessly to develop teaching methods and materials that have since been incorporated into many current educational systems. Left, towards the end of her life, the distinguished Italian educator greets an Indian teacher at a Montessori Congress. Right, freedom of expression, as displayed here by a young classroom artist from Czechoslovakia, is one of the main principles of the Montessori method.

© Publifoto, Rome

© Jan Lukas, Prague

and spoke without notes. When I went to ask her if I might have a copy of what she had said, she looked surprised and told me she had not got one. So I hurried home and wrote down everything I could remember. She read my notes afterwards and agreed that they were her words.

Even so, they gave only a pale reflection of her ideas. She had begun to take an interest in young children in the early years of this century, when she was working at the psychiatric clinic of the University of Rome and had been instructed to study the behaviour of a group of feeble-minded children.

She had already received a thorough scientific training for this type of research from Giuseppe Sergi, the anthropologist, who had founded the first Institute of Experimental Psychology at the University of Rome; and she was also familiar with the work of Professor Cesare Lombroso, the celebrated authority on criminal psychology. On completing her studies she turned to research, gradually deepening her insight into the physical and psychical substratum underlying abnormality and her understanding of the educational methods by which behaviour could be improved.

To acquaint herself with what was being done elsewhere in the field of remedial education, she went abroad, spending some time in England and then in France. In the latter country the investigations carried out by Itard and Séguin interested her particularly. J.E. Marie Gaspard Itard (1774-1838) was a physician who had devoted himself to the education of deaf children.

After her return to Rome, Maria Montessori continued her study of mentally defective children, improved her methods of training, and invented the teaching materials that bear her name—a set of objects (interlocking puzzles, cubes, cylinders, laces, coloured implements, figures, letters) designed to stimulate dormant sensory perception. Finally she opened a school to train teachers for the difficult task of preparing feeble-minded children to play their part in normal life.

Meanwhile, however, she had become increasingly absorbed by another question. "If," she asked herself, "after all this scientific research and study of educational methods, we can now improve the lot of the mentally deficient child, what results should we obtain if we gave equally close attention to normal children, on whom the future of the human race depends?" She decided that the methods of scientific research must now be applied to the psychology of normal children, and that in order to obtain reliable data the children must be in surroundings where they could behave spontaneously and naturally.

An opportunity to put this plan into practice occurred when the city of Rome began to build large blocks of low-rent flats in slum districts, each provided with a *Casa dei bambini* (a kind of crèche), and Maria Montessori was asked to organize and manage these. This was in 1906. In these nursery schools the children were given the Montessori teaching materials to stimulate their sense of touch, hearing and observation; and most important of all, they had teachers who, though always on the watch, left them free to behave just as they wished.

And to the amazement of these teachers—and of Montessori herself—this led to the gradual emergence of a

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A search for peace and a better world

new type of child, who could concentrate on one occupation for a long time, who was thoughtful, pursuing its psychological development and building up its own personality in this quiet and peacefully experimental atmosphere; who was placid and naturally polite—a completely unaggressive child.

Was it her discovery of the unaggressive child that led Montessori to the conclusion that man was really intended for work and peace, not for battle and destruction? Or was it her wish to guide mankind along the paths of peace that prompted her search for the methods and surroundings which would produce peaceful men? We shall never know; but from this time on she devoted herself mainly to the search for "the better man" who is to be found in every child that comes into the world.

She noted at this period that "The child's unsatisfied demands leave their mark on the grown man in the form of a conflict, a perpetual struggle that awaits man at birth and continues throughout his development—the conflict between the adult and the child, between the strong and the weak, and one might even add, between the blind and the sighted. The adult gets the better of the child, with the result that the grown man always carries the scars of these battles; something has been destroyed in him, and the price of his victory has been a painful adjustment." And it grieved her deeply to realize that during the process "the finest psychic qualities of the individual are lost forever."

GEOGRAPHY IS FUN for the younger children in this school in Pueblos, Colorado, U.S.A., when it can be learned while playing games on a giant map painted on the school playground. Lesson-games on this 35-foot-wide map of the U.S.A. are a feature of the programme.

USIS

Unesco - Sholomovitch

WHEN Maria Montessori gave her first public lecture on the theme of education for peace—in 1932, at Nice, at a Congress of the International Bureau of Education—she was almost dismayed by her realization of the novelty of this idea. Rather than make a frontal attack on the subject, she therefore chose an imaginative, persuasive approach.

She went back through history some twenty centuries and spoke at some length on the mysteriously recurring plague which took, over the years, a toll of millions and millions of lives. This had continued until men of learning, scrutinizing the invisible universe, discovered the microbe that was responsible for the scourge, and halted its reproductive process by drawing up certain vital rules of hygiene and inducing society to adopt them. As a result, modern man is physically healthier than his ancestors.

Having thus built up a proper basis for comparisons, Maria Montessori carried her argument further: "War is like plague," she said, "and it leaves us bewildered. But just as a new physical constitution was needed to defeat plague, so we need a new spiritual constitution to help us put an end to war.

"A child is required to be obedient, both at home and at school; as this demand for obedience is not based on any inner conviction, and makes no appeal to reason or justice, it merely produces men who are submissive to blind forces. The form of punishment, so frequent in schools, which consists in holding up the offender to public obloquy—putting him, as it were, in the pillory—gives children a senseless, irrational fear of public opinion, even when that opinion is manifestly unjust and mistaken.

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YOUNG SCULPTORS, pondering over their figures of men and animals, belong to the children's art school in Komsomolsk on the River Amur, a city founded 32 years ago and now one of the most important industrial centres of the Soviet Far East.

NURSERY SCHOOL HOUSEKEEPERS Children in this Paris nursery school learn how to wash the baby, a 6-lb. doll that "eats" and sleeps. The 300 three-to-six-year-olds in this school receive housekeeping and child-care lessons as part of training for adult life. One of the principles on which Maria Montessori based her system of teaching was that children should be shown how to do such practical things as sweeping, cleaning and washing.

Unesco - Giselle Freund

In the steps of Jean-Jacques Rousseau

"Adjustment to these circumstances, and to many others of a similar nature, which help to create a permanent inferiority complex, breeds and encourages a spirit of devotion, almost of idolatry, directed towards the 'leaders', the authorities who, for such repressed personalities, are a reincarnation of parents and teachers—the figures the child was taught to regard as perfect and infallible. In this way, discipline becomes almost a form of slavery."

But, declared Maria Montessori, there was another way in which schools could be regarded as the breeding-ground of war, inasmuch as instead of developing the child's sociability, they discouraged it. Five years later she stressed this point again: "Education in its present form encourages the child's sense of isolation and his pursuit of his own interests," she said. "Children are taught not to help one another, not to prompt those who do not know something, to think of nothing but their own advancement, to aim solely at winning prizes in competition with their companions. And these pathetic egotists, mentally wearied as experimental psychology reveals them to be, then go out into the world, where they live side by side like grains of sand in the desert—every one cut off from his neighbour, and all sterile. If a gale arises, this human dust, with no spiritual essence to give it life, will be swept away in a death-dealing whirlwind."

The death-dealing whirlwind was just appearing on the horizon; for this was in 1937.

At the VIth International Montessori Congress, at Copenhagen, the founder declared that the words "Educate for Peace" should henceforth ring out like a command. As she spoke there was a new note of distress in her voice. At the opening meeting she praised Denmark, "great and generous in offering hospitality to world peace," and expressed her satisfaction that Belgium, Catalonia, Chile, Czechoslovakia, Egypt, France, Greece, Haiti, Latvia, Mexico, Rumania, the U.S.S.R., the Swiss Canton of Ticino and the United States had responded to her invitation by sending official representatives to the Congress. She spoke of education for peace, of peaceful children, of peace as the true destiny of mankind, throughout that week in August, from the first meeting of the Congress to the last.

The Second World War confirmed her belief that her methods should be applied as widely as possible. As soon as it was over she began again to address teachers in her assured way, putting her ideas to them clearly and convincingly.

And so she worked on, tirelessly, to the age of 81.

It might well be asked: "What was so original about Maria Montessori's ideas?" She undoubtedly follows in the great tradition of Rousseau, who declared that the child is basically good, but is spoilt by society. But whereas in Rousseau this belief sprang from poetical intuition, in her it was the outcome of a precise, scientific study of the hundreds of young children she had the opportunity to observe.

It is true that while she was engaged in research and experiment other investigators in different parts of the world were working on the same lines and reaching similar conclusions. But she alone was guided by this ardent vision of mankind transformed; and she alone pointed out that nothing but an educational system which, instead of crushing the child, fostered his psychical energies, could produce men with the moral qualities required to control the tremendous scientific advances they themselves had brought about.

Unesco-Tamagawa Gakuen, Tokyo

AS A TEAM. Smiling group of youngsters from a Tokyo school set off for a day of outdoor activities of the kind advocated by Maria Montessori as a positive means of developing the child's sociability. "Education", she said, "too often encourages the child's sense of isolation and also his pursuit of his own interests."

THE SILENT MUSIC OF THE EARTH

by May Hall Thompson

THE classical definition of sound relates the phenomenon exclusively to the response of a "hearing" mechanism such as the ear. As such, sound is the sensation received through the organs of hearing from vibrations transmitted by any vibrating area in contact with the air.

But in physics sound is generally taken to relate to alternations in air pressure (or that of water or of other fluids) over a wide band of the spectrum. Thus, there are waves of such low frequency that we do not ordinarily think of them as sound at all but only as cyclic pressure waves of air of such long wave lengths that they can be detected only by sensitive instruments operating somewhat in the manner of a barometer.

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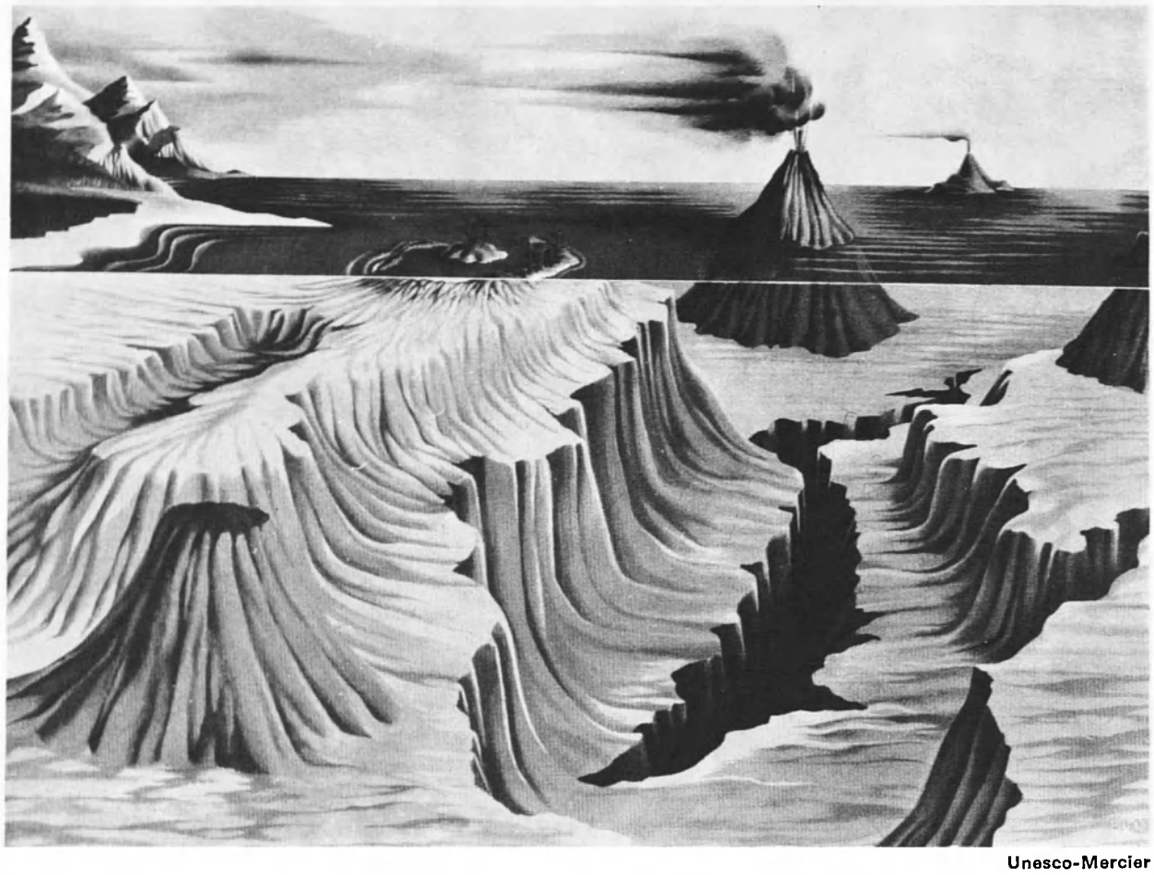


Unesco-Mercier

THE EARTH'S BRITTLE CRUST

Movements of the earth's crust under the ocean are shown in this plate from the Unesco colour filmstrip, "The Sea". From the waters emerge atolls and the islands formed by volcanic activity. Beneath lie huge undersea mountain ranges and between them is a vast rift in the earth's crust. It was the opening up of a "fault" of this kind that caused the destructive earthquake in Chile in 1960. Scientists were able to map the fault action from recordings of terrestial vibrations—the strange music of the earth hidden from man's ear.

VIBRATING PATTERNS

Intricate circular wave systems flow out through water into which two probes have been set vibrating on the same frequency. As the effect of the vibrations diminishes the patterns become less complex. The same effect is produced by the fundamental free oscillations of the earth.

MUSIC OF THE EARTH *(Cont'd)*

Sixteen octaves below man's perception

Such knowledge is not new, and "ultra-sound," or sound frequencies five or six octaves above the human sound perception threshold, has been made use of in industry, as is well known. By producing the right number of vibrations to accomplish a particular job, sound, or rather ultra-sound, can be used in various industrial processes. Supersonic waves can sterilize food, pasteurize milk, emulsify paint, clean castings, and so on.

But the use of sound that is not sound has recently brought to light another possibility—that of exploring the earth's interior structure. From the new methods now used precise and detailed information can be obtained on the details of the earth's inner density and elasticity, on the length of major earthquake faults, and the degree of the "ringing" of the earth. So while most of our attention recently has been turned to Outer Space, scientists have actually been learning more about the earth's interior (1).

Scientists, especially geophysists, have discussed and studied the vibrations of the earth for more than three-quarters of a century, but until recently little was known about these phenomena. Nevertheless science was able to evolve some theories and to define the related problems. Scientists believed there were free oscillations of the earth, unrelated to normal earthquake waves about which much had already been learned.

By studies of the passage of earthquake waves through the earth, some knowledge of the density and elasticity of the earth's crust, mantle, and core had been gained. But scientists believed the earth had vibrations of its own. They believed the earth played music that might be "heard" if only the means of detecting it could be devised. And if it could be heard, they wondered what would be the pitch, or the musical term for frequency, of the resulting oscillations?

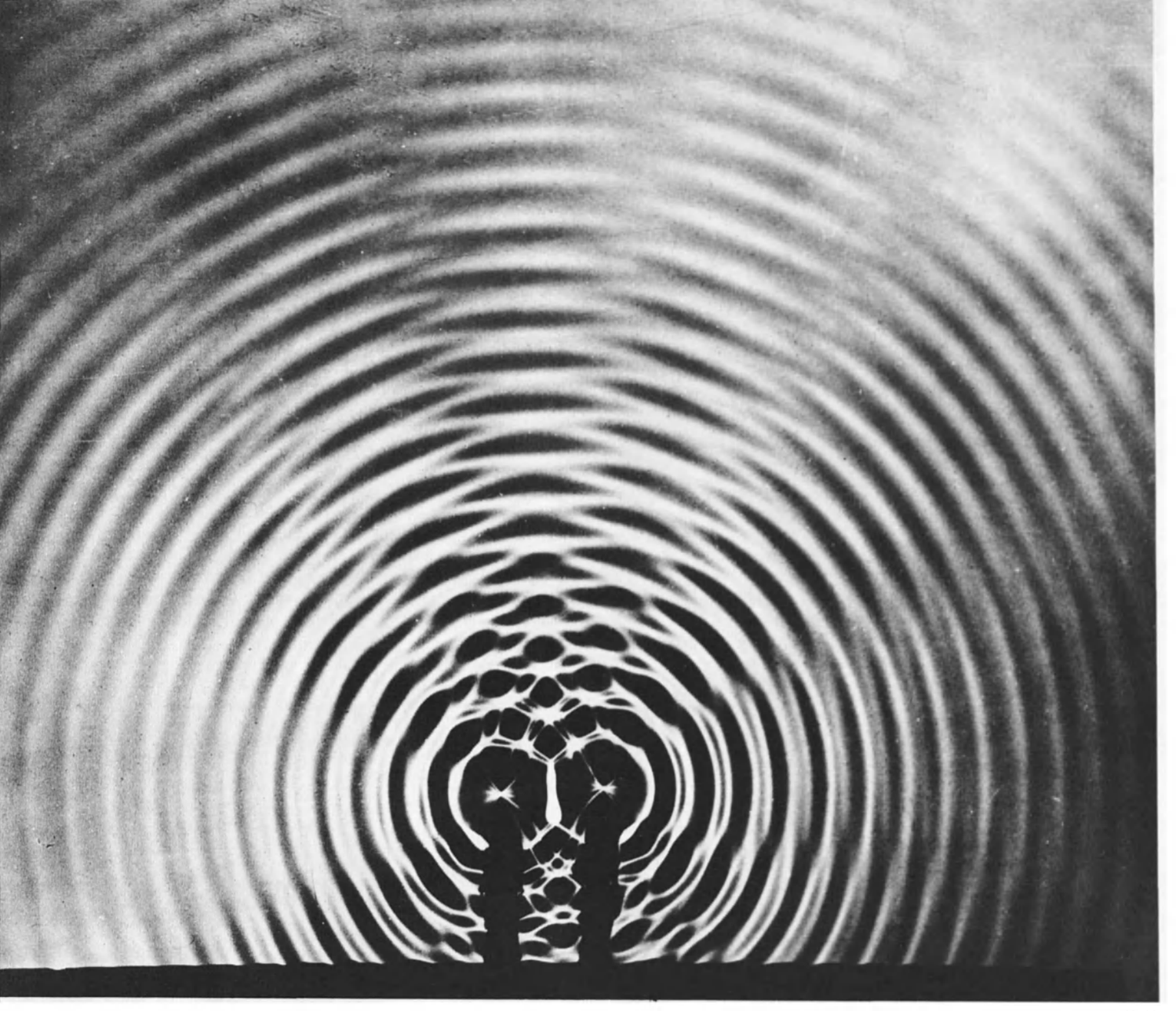
Some scientists began working on new instruments, electronic digital computers called extensometers and gravimeters. The extensometer records oscillations in the horizontal direction and the gravimeter in the vertical. The extensometer, an extremely sensitive seismograph capable of recording very slow oscillations, was designed by Dr. Hugo Benioff, seismology professor at the California Institute of Technology Seismological Laboratory.

Seismographs pick up normal earthquake waves that go around the earth but disappear quickly. The new computers were sensitive enough to detect a squeeze or stretch of one-sixteenth of an inch in the earth between Pasadena, California and New York.

One of Benioff's extensometers was located near Isabella Dam in California's Kern County and two of them at Nana, Peru. It was already known that certain shock waves, when passing through molten matter, act differently from when moving through solids. But among the things scientists also want to learn about the earth's interior is how much of it is molten and how much of it is solid; how deep the roots of mountains go into the

TWO MINUTES TO NOON

The worst natural disaster in recorded history occurred on September 1, 1923 when a great earthquake, followed by fires and landslides, devastated Tokyo, nearby Yokohama and the surrounding countryside. A dramatic new account of this great seismic catastrophe is presented in "Two Minutes to Noon", by Noel F. Busch, published by Simon and Schuster, 630 Fifth Avenue, New York 20, U.S.A. ($ 4,95)



USIS

earth; and how the course and severity of earthquakes can be accurately predicted.

If earth's music could be recorded and studied, more and more answers to these problems could be obtained. And then in 1960 the tremendous Chilean earthquake struck, and its massive jolt served as the striking hammer on the bell of the earth and set the earth ringing loudly enough for its vibrations to be picked up on the instruments. Sound that is not sound was "heard" at last! And through it more was learned about our ringing earth.

It was learned that the earth has two fundamental frequencies of vibration, one with a period of 53.1 minutes and the other with a period of 54.7 minutes. This double pitch is due to the fact that the earth is spinning on its axis. If it were not spinning it would have only one fundamental pitch whose frequency would be somewhere between the two.

The earth's overtones, or the secondary tones produced by the independent vibrations of a part of the vibrating body itself, go to frequencies as high as one vibration every 3.7 minutes. The torsional vibrations, or the twisting and turning vibrations caused by internal stress, are 42.3 minutes in length. The overtones die down a little faster than the fundamental vibrations. After about one hundred oscillations, the overtones were down to one-third of their original strength. The fundamental oscillations lasted even longer in the earth's core than near the surface because the core is a better bell.

Yes, there is a music of the earth that can never be heard by the normal ear unless a recording of it is artificially speeded up and played back, for the frequency of the vibrations is little less than one per hour. Sound that man can hear travels about 344 metres (1130 feet) a second in air under normal conditions. The lowest audible tone man hears naturally is four octaves below Middle C, while the Globe's music is about 20 octaves below. But the music is there—sound that is not sound, as we normally speak of it, yet now known and heard by certain scientists.

This discovery led to further progress. Analysis of the oscillations enabled the scientists to map the fault action that resulted in the Chilean earthquake, a fault of about 600 miles beginning near the town of Concepcion and extending southward, mostly under the sea.

More facts about the elasticity and the density of the earth through the crust, mantle and core were also learned and no doubt the future will bring us still greater knowledge. At present it takes great earthquakes, such as the Chilean one, to set the earth ringing loudly enough for its vibrations, to be detected. Smaller earth tremors may produce similar effects but so far scientists have not been able to "hear" them. Who knows, however, what the future will tell us about the inside of our planet? Perhaps it will prove almost as interesting as Outer Space.

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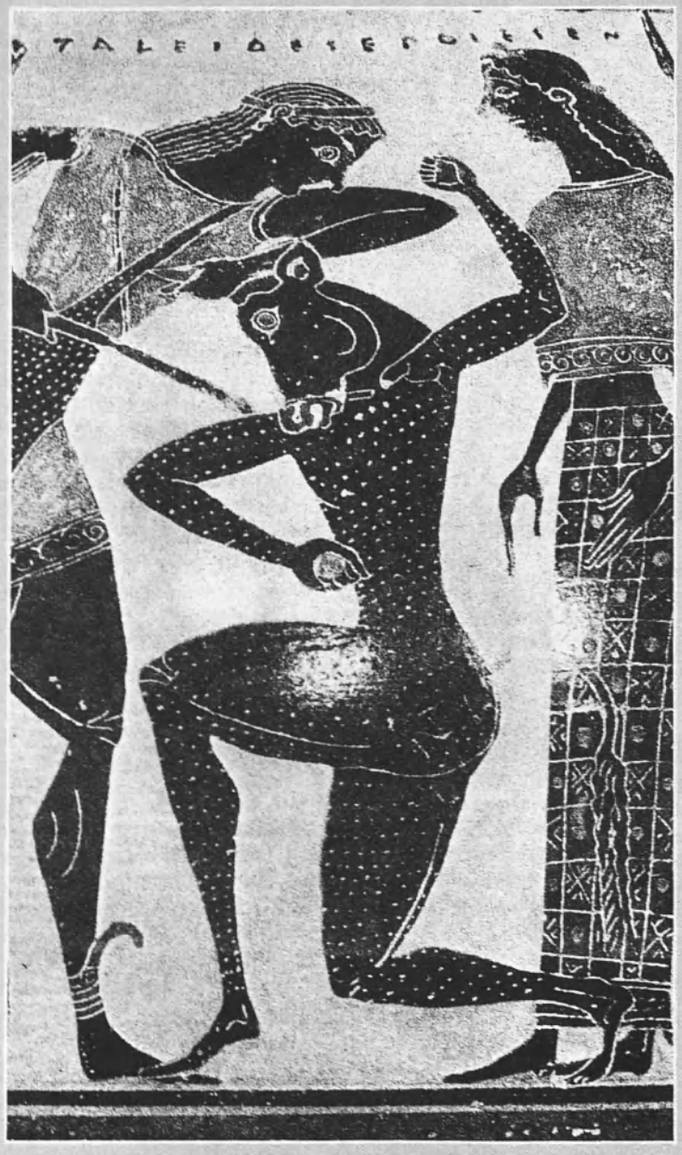
(1) *See "Probing the Interior of the Earth," The Unesco Courier, Oct.* 1963.

PANTHEON OF GREEK GODS AND HEROES

Above, head and neck of bridled horse decorates both sides of this black-figured Attic vase (560-550 B.C.). Below, another vase painting showing Theseus killing the Minotaur, the famed mythological monster of the Cretan Labyrinth (about 540 B.C.).

The scenes from Greek mythology shown here were painted over 2,500 years ago on Attic black-figured vases now in the collection of the Metropolitan Museum of Art in New York. Photographs and descriptions of 56 of these vases and vase fragments recently appeared in a special fascicule (1) prepared by Dietrich von Bothmer. It was published under the auspices of the International Council for Philosophy and Humanistic Studies with financial help from the Metropolitan Museum and from Unesco. The fascicule has now been added to the *Corpus Vasorum Antiquorum,* a vast "catalogue" of the world's antique vases which the International Academic Union has been assembling since 1922. Many countries have contributed to the *Corpus* whose 118 fascicules now constitute a planned and detailed record of some of man's finest antique art treasures.

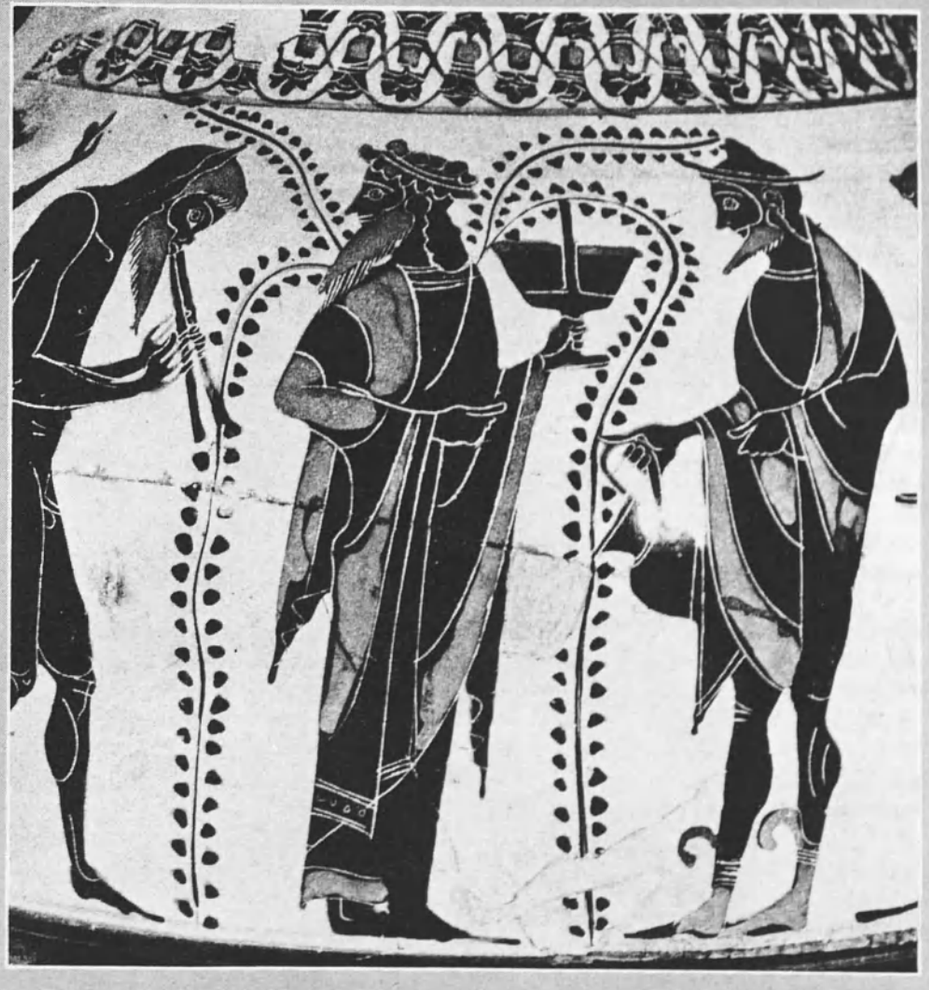
(1) "Attic Black-figured Amphorae", published by Harvard University Press, 79, Garden Street, Cambridge, Mass. U.S.A., from whom this and other U.S. fascicules in the "Corpus Vasorum Antiquorum" may be ordered. Do not order from Unesco.



Four men and a youth competing in a foot race. They appear on a prize amphor, one of the Panathenaic vases linked with the festival of Athens, held to celebrate the union of Attica under Theseus (about 520 B.C.).

All photos © 1963, The Metropolitan Museum of Art, New York.

A scene believed to depict the apotheosis of Herakles. The woman in the chariot, holding the reins and the goad, is probably Athena, goddess of wisdom. On far side of horses are Apollo and Hermes (about 530 B.C.).



Dionysos, in the centre, turns his head towards a flute-playing satyr. To the right of Dionysos stands Hermes holding wine pitcher (530-520 B.C.).

Dionysos, god of wine, of fertility and of the theatre, shown between two dancing satyrs. In his left hand the god holds a drinking horn. Vase painting dating from about 520 B.C.

THE DAY THE RIVER SPOKE

This is a story about Janu, the little girl from India who lived in a village way down in the southwest, in a place called Kerala between the mountains and the sea. It is a green land where the hibiscus and the frangipani bloom, and coconut palms grow tall and beautiful. In the fields men and women work together before the monsoons and after, in the seasons of harvest and sowing. If the big rains fail there is not enough rice to go round, and many homes go hungry. But the children are bright-eyed and eager, wanting to know what lies over their mountains and their sea — in their own land which is India, and the other lands beyond.

A Short Story
by Kamala Nair

JANU wriggled through the gap in the bamboo fence and walked down the path between the paddy fields. The paddy lay green and soft as far as the eye could see—to the east where blue grey hills were tall against the morning sky, to the west till it met the railway track, and before her, southwards, right up to where the green river slipped and slid through shale and boulder to the sea.

She could not see the sea, of course. But Chandu, the fisherman, had long stories to tell of the river's journey to the sea and how skilfully he had to row his boat at the river's mouth. It was wonderful to listen to the stories Chandu had to tell and to see the fish he brought, rowing up river from the sea—the clams and mussels and the silvery sardines that all her village loved, and the dogfish that was cured and salted and hung from the kitchen rafter in a plaited basket made of palm leaves.

All along the river by the edge of the fields were the coconut palms, their leaves feathery in the sunlight, and when the big, round moon rose above the hills, the leaves were wet with moonlight and they rustled. Sometimes when the breeze swept through the bamboo clumps by the river one could hear a delicate "rat-tat-tat"—the reed song that the bamboos liked to sing.

Janu walked a little slowly now, sniffing the salt air which blew landwards from the sea. Sometimes, she stopped to pick up the small flat stones which she saved for skimming on the still water of the tank in Meena's house. The red silk cotton tree was a glory of colour and the gnarled, twisted branches of the frangipani were laden with blossom. She plucked two, folding the petals back so that they looked like ear-rings. Their scent was lovely and warm and she put some in her hair as well.

She noticed a tiny yellow spider in the golden heart of a flower, and shrank from it at first, then she shook the flower, and the spider spun a long thread and fell to the ground. A tiny, golden spider. "I hardly saw it at first,", thought Janu, "it was so yellow, just like the flower." She had seen brown spiders and large black ones which always scared her, but never one this colour.

Study of a girl by Purnendu Mukherjee, a 13-year-old Indian boy. This drawing was awarded first prize (13-14 age group) in the international children's art contest held by Shankar's Weekly, New Delhi, in 1954.

She had reached the river bank now and sat on her favourite rock, her hands cupping her chin. She had long, bright eyes which her mother had darkened with lamp-black and antimony and her hair was bunched up in a knot.

A green lizard slid from under the rock and disappeared into the bamboo. A copper-smith sounded its "Honk honk, honky tonk" in the distance. The river went past, its murmur soft in the stillness, and Janu said to herself—she loved talking to herself—"I've never seen a yellow one before. Why do yellow spiders hide in yellow flowers? I must ask Ettan."

CONT'D ON NEXT PAGE

The day the river spoke *(Cont'd)*

Ettan went to school where the teacher had taught him to read and write, and he used to sit in their verandah loudly reading his lessons over and over again. All the boys in their village went to school, she noticed. But not all the girls.

Meena went, of course, but that was different. Meena had no brothers or sisters and her father was the village headman. Why, her mother even wore gold "zari" on her blouse when she went to the big town in the railway train, and she had a fine black umbrella, and Meena had one too, a small black one with a red tassel.

Most of the others in their village used palm-leaf umbrellas which they wore on their heads like a hat with a wide brim. It was so much easier to work in the fields in rainy weather when one wore a palm-leaf umbrella, because it left both one's hands free, but a black umbrella was so much nicer to have.

"Mother, why can't I go to school like Ettan and Meena?" Janu had asked. Janu called her brother "Ettan" because Ettan means "Elder brother," but his real name was Gopi. And Mother had replied: "You are too small, baby. Maybe later." But when she was five, Little Ramu was born and Mother said: "Maybe next year. Janu girl, mind your little brother while I go to the fields now."

THEN Little Ramu was two, and then three and Mother said: "Hush your crying now. Ettan goes to school because he is a boy and boys must learn early. You be just my little girl and help me to clean the rice and fetch the wood. And you keep Little Ramu out of mischief."

"But Meena is a girl and she goes to school!"

"Meena's father has a lot of money," said Father who had come in from the fields. "Sending girls to school, indeed! Learning to cook is what they need. And sweeping and pounding rice and helping in the harvest."

And Big Uncle who lay on his straw mat in the corner sat up and said: "What's that? What's that? Getting lazy, is she? A bamboo switch is what she needs," and then he choked because his wad of betel leaf nearly went down the wrong way and Mother rushed to pat his back to stop the coughing and Janu nearly wept because no-one was listening to her.

"But I can do all that when I come back from school. I promise. Please, Father!"

"And who's to mind Little Ramu, I'd like to know? And your mother in her condition!"

Janu looked at her mother and sighed. She looked very much as she did just before Little Ramu was born.

"Would you like to go down to Chandu and buy some sardines for the pot?" asked Mother kindly, changing the subject, and Janu took the coin Mother gave her and went down the fields to Chandu.

BUT Chandu only laughed when she said she wanted to go to school like Ettan. "And what would you be doing in a school?" asked Chandu. "Bawling your lessons all together. Waste of time, I call it. Now if you said: "Let me learn to make a net, let me learn to catch fish," there'd be some sense. Schools!" Chandu spat with unerring aim into the water. He wrapped the sardines in a piece of paper and said: "There, now. You run along home and learn to make some man a good wife one day. And tell your Mother sardines are coming scarce now. Next time it'll be dogfish!"

Ettan was twelve and growing bigger and Ramu was five and going to school and she was nearly ten and minding Little Appu who was the smallest. She came sometimes to the river when Mother wasn't looking, slipping through the gap in the fence. Down by the river everything was quiet and peaceful and she was happy. Mostly. But today wasn't one of those days.

A big bright tear splashed down her nose. And another. And another. A kingfisher swept down, its wings an arrow of blue in the sunlight. And the green lizard slithered down to the river's edge to bask in the sun, "Dear, dear!" said a sleepy, murmuring voice, "what's the matter?"

Janu started, because she was sure she had been quite alone. It couldn't have been the lizard. And the kingfisher was up in the bamboos eating the fish it had caught. It couldn't be the parrots, because parrots shrieked and this was such a sleepy voice. She looked around her. There wasn't a soul in sight. She was rather scared and wanted to run away.

DRAWINGS BY A.B. SCHWARZ

These illustrations are taken from "A Journey Through Toyland," by Kamala S. Dongerkery; Popular Book Depot, Bombay, 1954.

"You shouldn't cry, you know," the voice went on. "And you really shouldn't be scared, when you have been coming here to see me every day—well, almost every day."

She started uncertainly. It was such a murmurous sleepy voice, like the river. It couldn't be the river!

"Well, tell me all about it," said the River, for it was the River. "I've got to hurry to reach the sea, you know."

"They won't let me go to school," said Janu. "They don't want girls. They only"—she stopped a sob—"only want boys. And I'm so old now, they'll never let me go. And I want to go. I want to learn to read like Ettan and Meena. I want to know why spiders are yellow in yellow flowers, why the bamboos rustle, why the moon always comes from behind the hills, never the other way, why the baby fish in the field water become frogs, why. . ."

"Stop!" said the River. "You make me breathless. So many 'why's'! I can tell you where the moon goes," he said conspiratorially. "She goes down towards the sea. I've seen her; she always takes the same way—over the mountains and down to the sea, like me!"

"Even Little Ramu goes to school," said Janu bitterly. "Pity the school isn't by the sea," said the River. "Then I could take you along, you know. But I suppose I couldn't really. You'd get your feet wet. And that would never do! No, there's only one thing you can do, I'm afraid!"

"I can do something?" asked Janu. "Well, it's up to you," said the River. "Seems to me little girls can do as much as little boys—they swim as well as little boys. You just slip along one morning and sit there in the school and listen to what's going on, and maybe the teacher will let you stay."

"I couldn't," gasped Janu. "I couldn't! They'd scare me. They'd chase me out." The River laughed. "You? Scared?" he said, "when you're not afraid of the green lizard, or of the snake in the bamboo clump," (Janu started) "or the big trains rattling past that bridge. Trains are noisy. I prefer ships," said the River.

JANU forgot to be scared of the snake she'd never known was in the bamboo clump. "What are ships?" she asked. "Big boats," said the River, "so big that they can take hundreds of people, and they sail along the sea with lights that shine all night."

Janu held her breath. "Will they come here?" she asked. "I'm afraid not," said the River. "Too large, you know. Chandu's catamaran is good enough for me. Chandu can take you to see a ship, some day."

"They'd never let me!" wailed Janu. "Oh, why am I a girl?" "Try going to school first," said the River. "Remember—it's up to you!"

He sounded sleepier than ever and Janu could hardly hear him now. She rubbed her eyes and sat up. It must have been a dream. But when she scrambled down the boulder, carefully skirting the bamboo clump before she got to the path through the fields, she thought she heard the river chuckle. A slow, sleepy chuckle.

She'd done it at last, but it hadn't been easy. First of all she'd had to wait till Father went to the fields and Mother began the cooking. Then she combed her hair and put on the red ribbon Meena's mother had once given her. Big Uncle had finished his early meal of cold rice and salted mangoes and was asleep. Little Appu was sucking a contented thumb and Ettan and Ramu had already left for school.

Ramu was using the slate Ettan used when he first went to school and which, when no-one was looking, Janu used to borrow just to draw pictures. Very quietly she would draw Chandu's boat and the bamboo clump and the school. On the slate you could draw things and rub them out and draw again.

She put Little Appu down on the mat and went towards the fence. Little Appu let out a howl. She went back hastily and picked him up. Little Appu gurgled happily and pushed a chubby fist into her face. She said under her breath: "I suppose I'll have to take you now. Only if you start crying when we get there, I'll—I'll throw you into the trees and the parrots will come and take you away."

She reached the school panting and out of breath and stood by the door listening while the teacher read out the lesson. It was a story about a prince called Asoka who became a great king. Little Appu had fallen asleep on her shoulder. She crept nearer and nearer till she was in the back row squatting with the others on the earthen floor. Little Appu made no noise and she listened.

The teacher was asking questions. Everyone was busy turning over the pages and holding

CONT'D ON NEXT PAGE

The day the river spoke *(Cont'd)*

up a hand to answer and when the questions were finished, the teacher said: "Now, I have a surprise for you. Next week we shall take the train and go down to Kozhikode and there we can see the big bazaars and the tile factory and I shall show you the sea and the lighthouse."

There were delighted shouts from the class. "Please, Sir, what is a lighthouse?" asked Kutty, the weaver's son.

"It is a big building shaped like a pencil—a huge pencil—with a bright light at the top that shines very far, so that the ships at sea can sail safely."

"Is a ship like a catamaran, Sir?" asked Nanu whose mother lived all by herself at the edge of the clearing by the forest. He walked two miles to school and back every day.

"Now who can answer Nanu's question?" said the teacher and Janu forgot Little Appu and her fear and her shyness and said clearly: "It is much, much bigger than a catamaran, big enough for hundreds of people to live inside and. . ." She stopped.

All eyes were on her and Little Appu who had been jerked out of sleep when she got up to answer, let out a wail. Janu panicked. "Where did you spring from, little girl?" asked the teacher. "And what is your name? You're new in my class. And haven't I told you, all of you, not to bring your little brothers and sisters here? Whose little boy is he? Who brought him here? Hey? Answer me!"

The teacher's spectacles nearly fell off and the class was a forest of shiny black heads all nodding, all whispering. Janu's lower lip trembled. «J-Janu, Sir. He... He's my little brother. I didn't mean to make him cry. I didn't mean. . ."

"She's Gopi's sister—Gopi is in the next class,"said one of the boys.

"It's Janu," said another.

"She's Uncle Gopalan's little girl," said a third.

And the teacher said: "Come here, Janu. All right, all right, pick him up and bring him along, too. Come here to my desk. Now, all the others can go."

SHE went in fear and trembling and Little Appu sobbed with fright at the strange faces round him. The boys trooped out into the sunshine, leaving her along with this stranger. She held Little Appu close for comfort. She no longer wanted to go to school. School without the children inside was terrifying.

"So you're Gopi's little sister? Nice lad, Gopi," said the teacher, peering at her over his spectacles. "I suppose he doesn't know you're here.

"I suppose your mother thinks you're lost. And your little brother, too. Now tell me, why didn't you come to school before?" He held out a pencil to Little Appu who looked shyly at him and finally grasped it in his chubby fingers.

By the time the teacher had heard from Janu herself all about how she couldn't go to school it was past midday, and when she went home her mother was so worried that she scolded Janu from sheer relief, and her father said he'd take a stick to her back one of these days, roaming about when there was work to do, and much more, in the way her father always spoke when he came home tired.

But her secret was her own, like the bright shiny copper coin she polished with tamarind juice and put away carefully under her mat each night. Of course, when Gopi came back from school, everyone would know about her escapade. But no-one knew what the teacher had told her—her bright shiny promise which she held tight to her heart like her copper coin which glinted in the sunlight. "If you really, really want to come to my school, Janu," the teacher had said, "we'll talk your father into it. Don't you worry. We'll find a way."

Meena had laughed at her story. Meena always laughed a lot and when she did, the dimples came and went. Meena said it was all over the village, the way Janu had just walked into school, and Meena's father thought it a pity that some boys didn't have so much spirit and Meena's mother said: "Wait till she grows up, she'll shake up this place, I've no doubt." Then Meena had said: "Let's swim a bit, shall we? Race you to the tank." And she had pulled Janu into the water and they raced each other swimming to the other side and back.

"School is fun," Meena said, shaking her damp curls. "You'll like it. I hope your father will let you come. My father says that if you really study hard, you can go on and on and on, maybe even to High School."

"And after High School?" asked Janu, though she didn't know what High School was. But Meena didn't know the answer to that. Not yet.

Janu saw the teacher walking up the steps to their gate the next evening when she was lighting the lamp. She lit the lamp and brought it to the front verandah and set it down on the step, a tiny winking light to bless their home. Big Uncle had a sprig of tulsi leaf behind his ear, and was chanting his prayers and Ettan and Ramu joined in, little Ramu stumbling over the big words. She was too excited to pray. To chant them with Big Uncle, that is. But, she did say a prayer all by herself. Not loud, but a small prayer which she hoped God would hear.

She could see her father scratching his cheek the way he did when he was worried and the teacher was nodding and saying something she couldn't make out. Then he offered her father some betel leaf and tobacco to chew and they chewed it in a friendly way by the bamboo fence.

And Mother said: "Little Janu, I shall miss you when you go to school. They do say nowadays that girls should learn like boys—when I was your age I wanted to go to school, but your grandmother said 'No', but now, I am glad the teacher came to talk to Father."

HE came yesterday too when you were at Meena's house. He thinks you can study just like Gopi, and I want Gopi to grow up and pass his examinations and work in a big building as they say Meena's uncle does, far away in a place called Delhi—so far it takes three days to reach there by train.

"But what will you do, Janu girl, if you go to school now? You'll learn to write your name and maybe to sew with that big machine,, like Meena's mother, but we won't have any money to buy a machine, so it's no use thinking of that. Well. . .if you've set your heart on it, I suppose there's no stopping you."

And she sang to Little Appu:

O little koel, little black bird,
Don't you know the season's changed?
Comes the wind and comes the rain
Won't you build your nest again?

And Janu said: "Mother!" and went and threw her arms round her mother's neck and hugged her tight. "When I grow up," she said, "I'll be a teacher and I'll go from house to house in our village and ask all the little girls to come to my school. And I'll teach them all I'm going to learn. You'll see!"

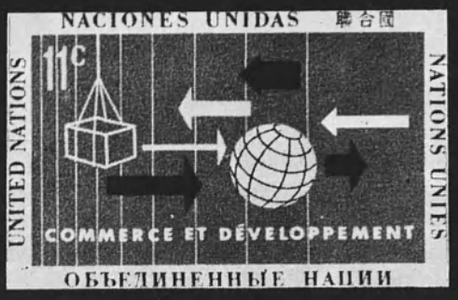
And she went down the path between the fields the next morning before school began, with a hop, skip and jump and sat on her favourite rock, the red ribbon in her hair and a yellow flower.

I did it!" she told the river. "I was scared, but I dit it! And they're letting me go. I'm going to learn to write my name and do sums and find out why our little fishes in the ricefields turn into frogs and see the lighthouse. One day I'll see a ship," she nodded to the river.

And the river slipped and slid between shale and boulder and held its green course among the bamboos, and the coconut palms. Janu took the frangipani blossom from her hair. "Take this to the sea for me, dear River," she said, "and hurry, hurry, or you'll never reach there." She turned back to look as she went past and there was the white and yellow blossom floating down the current. She was sure it was a dream the day the river spoke, but here she was actually going to school with a red ribbon in her hair and that wasn't a dream.

She ran between the tall green fields. And way behind her she thought she heard the river's sleepy chuckle: "Come again, little girl, and I'll tell you all about the ships that sail the sea," he seemed to be saying, but of course, it could have been just the breeze sighing through the ricefields in the morning.

KAMALA NAIR *is a member of the Indian Ministry of Education, New Delhi. Her story is set in Kerala which has the highest percentage in India of literacy amongst women, and where almost all girls of the age group* 6-11 *are now in school. "The theme, however," she writes, "is of topical interest in view of the very real need of stepping up the enrolment of girls in schools in South and South-East Asia."*



The Unesco philatelic service

As agent in France of the U.N. Postal Administration, Unesco's Philatelic Service stocks all U.N. stamps and first day covers currently on sale as well as stamps issued by Unesco member states to commemorate important events in the history of Unesco and the U.N. Some recent issues are shown here. Above, from left, a newly-designed U.N. 50 cent stamp which has now replaced the 50 cent issue in use since 1951, a U.N. stamp honouring the United Nations Conference of Trade and Development which opened in Geneva on March 23, and a stamp commemorating the 10th anniversary of the Korean National Commission for Unesco. On left are stamps from Nepal (with the slogan "Education for All", recalling Unesco's efforts to promote literacy and extend education) and from the Mongolian People's Republic (marking its entry into the United Nations). For prices and further details write to The Unesco Philatelic Service, Place de Fontenoy, Paris (7e).

STORIES IN STAMPS

Some years ago an enterprising teacher in Monaco decided to organize a philatelic contest among his pupils. His idea has now grown into a large scale international stamp competition and exhibition which, as Scolatex II, recently attracted 2,000 entries from 18 countries. Organized by the Unesco National Commission for Monaco and the Monaco Philatelic Union, the contest seeks to show the educational value of postage stamps and their role in promoting international understanding. After being judged and displayed in Monaco, a selection of the exhibits was shown at Unesco's H.Q. in Paris, where prizes, including Unesco Art Albums and subscriptions to The Unesco Courier, were awarded by Unesco. Winners of the inter-school section awards were: (1) École Schœpflin, Strasbourg, France (History of Postal Services in Alsace-Lorraine); (2) École Catholique de Garçons, Wissembourg, France (Hunger in the World); (3) Young Philatelists' Club, Kochitse, Czechoslovakia (The History of Dress). Winners of individual prizes were: (1) Claude Bosse, Monaco (Hydro-electric power); (2) Zbynek Pop, Breznice, Czechoslovakia (A Child Grows, Plays and Learns); (3) Alta Lanos Iscola, Budapest, Hungary (The Concentration Camps). Right, four stamps from the prizewinning exhibit, The History of Dress.

Letters to the Editor

A CLASSROOM HELPER

Sir,

We live in a time of "universalism" and nothing concerning mankind should be alien to any of us. Through your magazine UNESCO helps to achieve the great task of making nations approach each other on the basis of a broader mutual knowledge. In the French lessons which I give at the University and the Polytechnic School of Guayaquil, I make good use of the French edition of THE UNESCO COURIER, both for translations and exercises. By using it in this way I find that the interest created in the subjects you present is sustained and increased for my students.

Luis Felipe Torres
Guayaquil, Ecuador

WHEN FLIGHT WAS SILENT

Sir,

In his article on the history of balloons (Sept. 1963) David Gunston relates how the French used a tethered gas-bag for observation purposes at Maubeuge. This captive balloon was actually used at Fleurus in the Belgian province of Hainaut during the famous battle in which the army of the French Republic defeated the Austrians, on June 26, 1794. This was the first time a balloon was used for military reconnaissance.

I was surprised that the article did not mention Auguste Piccard, the Swiss scientist and professor at the University of Brussels, who in 1931 became the first person to reach the stratosphere (16,000 metres) using a balloon carrying a sealed nacelle.

Eliane Jacquemyns
Brussels, Belgium

VULCANOLOGISTS OF RABAUL

Sir,

In your excellent issue about the interior of the Earth (Oct. 1963) vulcanological observatories are discussed but no mention is made of the well-equipped observatories in the Melanesian region of the Pacific: facilities for the prediction of volcanic eruptions exist at Rabaul, in New Guinea; Honiara in the Solomons; and Vila in the New Hebrides.

In particular, at Rabaul, the Australian Government has maintained a Vulcanological Observatory since 1937 to watch over the 30 dormant and active volcanoes in the Territory of Papua and New Guinea. The Observatory is under the auspices of the Administration of Papua and New Guinea and is partly staffed from the Bureau of Mineral Resources, Canberra, Australia.

The Rabaul Vulcanological Observatory is equipped with a most up-to-date telemetered seismic network to safeguard the large population living in and around the Rabaul Caldera. In addition, a comprehensive reporting network utilizing government patrol posts, missions, private plantations and air companies ensures an adequate warning of any premonitory volcanic phenomena. These reports are immediately checked by competent vulcanologists from Rabaul. Three more seismic outstations nearing completion at outlying volcanoes, to be manned by Papuan and New Guinean Vulcanological Assistants, will increase the protection offered by the present organization.

C. D. Branch
Vulcanologist
Rabaul, New Guinea

BELGIUM'S CONGO RECORD

Sir,

In your November 1963 issue you publish a long article on the Congo (Leopoldville). I can understand that UNESCO wishes to tell readers what it is doing in the world, but I would have hoped for a more accurate account and for a little justice to be rendered to the former colonizers.

Though it may be true that in 1960 the Congo had produced few university students, it was also a fact that of all countries in Tropical Africa, it was the one with the lowest illiteracy rate.

You also speak of Lwiro. From the captions with the photographs anyone unfamiliar with the subject would certainly believe that this scientific centre had been created by UNESCO, when, in fact, it was a Belgian foundation and always welcomed foreign research workers who wished to study there.

I have been sorry to see that in the organizations connected with the United Nations, Belgian achievements in the Congo are easily forgotten whereas there is no lack of criticism of a kind that is not necessarily valid.

Dr. R. Mouchet
Brussels, Belgium

HIDDEN HUMUS RICHES

Sir,

In the forests and jungles covering great stretches of the earth, a continuous process of life and death goes on, especially in the tropical and subtropical zones. Rotting bark and leaves, transformed into humus, eventually feed new plants and trees that replace the dead ones. Humus can also be obtained by draining lakes and swamps whose bottoms are full of decomposed plants and other vegetal organisms. Could not the humus from both sources be used as a fertilizer in those parts of the world whose dry, sterile soil needs it so badly? This might literally mean salvation for millions facing hunger. Is my idea too utopian? Let us have some expert opinions on this point.

Augustin Rubio Delclos
Barcelona, Spain

OPEN THE WINDOW WIDER

Sir,

Your motto is "A Window Open on the World." Unfortunately that window is not a very big one! Ours is a changing world and in my opinion THE UNESCO COURIER does not keep pace with the changes.

In place of former colonies, new, independent states are taking shape with their own, original, even though young, cultures. A glance at the map of Africa is sufficient; in the last five years the continent has become unrecognisable.

What is life like in these new states, how are the people building their economy despite all their difficulties, how do they work, how do they spend their leisure time? Every one of these peoples has its own customs, each has its own dances and songs. I should like to see all these interesting things through your "window."

It is true you have published some material on these subjects, but very little, and your authors have more to say about the past of the peoples of Africa and Asia than about the present.

The theme is certainly a broad one. Tell us how the people of countries like Mali or Ghana, Western Samoa or Yemen or Gambia are living today. Interesting changes are taking place in the U.A.R. and Algeria. In short, open your window wide, so that through it we shall see that part of the world to which spring is only just coming.

The year 1963 was marked by a very encouraging event—the conclusion of the Moscow Test Ban Treaty. The world is growing warmer, but the warmth is only faintly reflected in the columns of your journal.

I should like to read how the people of different countries are fighting for peace, I should like to know something about our contemporaries who grudge no effort in the struggle for this great cause.

Anatoly Chetverikov
Gorky, U.S.S.R.

PORTRAITS OF GREAT ARTISTS

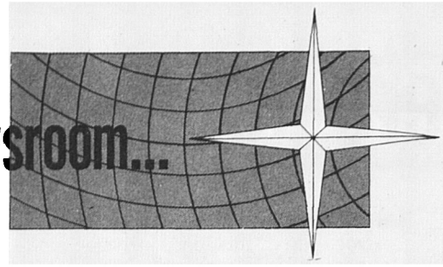
Sir,

I realize that you cannot always satisfy the requests of all readers. I would like to hope, however, that you will one day publish an issue similar to the one on Velasquez (December 1960) which encouraged me to subscribe to your magazine. Could you not devote an issue to another great artist?

René G. Ryckebusch
Dallas, Texas, U.S.A.

Ed note: We are studying the possibility of introducing colour and thus hope to present great works of art in colour more often.

From the Unesco Newsroom...



TESTS FOR TEXTBOOKS: Five European countries are taking part in a UNESCO experiment to compare geography books published in different countries and assess their contribution to international understanding. Books from Denmark, France, the Federal Republic of Germany, Poland and Spain are to be evaluated for accuracy, adequacy, objectivity and balanced presentation by experts from Argentina, Brazil, Chile and Mexico. Geography books from these Latin American countries will also be reviewed on a similar basis by European specialists.

NEW UNESCO ART SLIDES: Mosaics from Israel, illuminated manuscripts, from Ethiopia and Byzantine mosaics from Greece are illustrated in three new series of art slides issued by UNESCO. The UNESCO Collection brings within reach of a wide public masterpieces that are not adequately known. Each series consists of about 30 mounted slides (5×5 cms) with an explanatory booklet and captions in English. French and Spanish.

LONGEST LABORATORY: Across the Central Asian deserts, the Kazakh steppes, the Altai mountain chain and the Siberian tsiga stretches a chain of seismological stations of the Soviet Institute of Earth Physics, ranged in a line over 2,300 miles long. In the past three years it has made studies into what is happening inside the earth to a depth of 600 miles and more. It has also made a special study of tidal movements in the earth's crust—oscillations which can amount to over one foot per day.

VIENNA COURSE FOR GEOLOGISTS: An International Post-Graduate Training Centre, sponsored by UNESCO and organized by the Geological Survey of Austria, will hold its first course in Vienna for eight months, from September 21, 1964. Application forms to attend this course are obtainable from Geological Survey of Austria, Wien III, Rasumofskygasse 23, Austria, and should be returned before April 15.

MILKY WAY TELESCOPE: Sweden's largest radio telescope is now being built near Gothenburg on the country's west coast. Intended for research in the Milky Way and for tracing space signals, the telescope is equipped with a reflector whose diameter is over 100 feet.

DWINDLING REDWOODS: The World Wildlife Fund reports that the Giant Redwoods of California are still being felled for lumber in their hundreds. In one area six miles of redwoods will soon fall unless conservationists can acquire the property. It is hoped that one grove, the Pepperwood Grove, may be bought as a memorial to Dag Hammarskjold, late Secretary-General of the United Nations.

ETHIOPIA'S NATIONAL MUSEUM: A museum is to be built in Addis Ababa to house the cultural and artistic heritage of Ethiopia. It will have three main departments: archæology, painting and sculpture, and folk arts, and an auditorium for theatrical and cinema performances.

'LIBRARY/USA': A unique computer-equipped reference library, "Library/U.S.A.", is one of the outstanding features of the New York World's Fair. It makes use of a combination of books, electronic equipment and professional personnel not only to provide information to Fair visitors, but also to demonstrate the dynamic nature and significance of the modern library.

MONUMENTS ON THE MAP: Switzerland has arranged for the publication by its Topographical Institute of a map on which there are shown the sites of its artistic and historical monuments, as well as those of Liechtenstein, its neighbour. Switzerland was the 49th country to ratify the International Convention for the Protection of Historical Monuments in the Event of Armed Conflict, sponsored by UNESCO.

KABUKI SHOWS FOR EUROPE: Kabuki, the centuries-old traditional drama of Japan is to be presented to European audiences later this year according to the Japanese Foreign Office. It is hoped that a troupe composed of 60 to 70 leading actors will perform in Berlin, Rome, Paris and London.

WAR ON ILLITERACY: Senior officials from some 40 African countries met in Abidjan, Ivory Coast, at a UNESCO regional conference last month, to explore ways of stepping up the fight against illiteracy throughout Africa. Their conclusions were later submitted to a meeting, also held in Abidjan, of African Ministers of Education.

CALLING DOCTOR X: An Australian doctor has developed an emergency radio call service gadget called "Telmar". Connected to the horn of a motor-car it can be used to contact the doctor while he is on his rounds or, as it weighs only two and a half pounds, it can be worn in a case over the doctor's shoulder. Tests have shown that Telmar can receive signals from 50 miles away.

DOCTORS FOR THE CONGO. Fifty-nine Congolese (Leopoldville) medical assistants who were accepted in French medical schools in 1960 have now gratuated and have returned to their country as full-fledged doctors. Their training was made possible by fellowships from the World Health Organization, financed from U.N. allocations to the Fund for the Congo.

WRITING ABOUT THE U.N.: A prize competition for the best magazine articles on the economic and social activities of the United Nations published in 1964 is being organized by the International Federation of the Periodical Press, which is offering awards of $500, $250, $100. Articles entered should be sent to the IFPP, 45, rue de Lisbonne, Paris-8e, France, before January, 1965.

SCIENCE BOOKS FROM SWEDEN: A gift of 50,000 volumes of scientific literature, worth about $80,000, is being made by Sweden to a dozen developing countries in Asia, Africa and South America. The scheme is sponsored and financed by NIB, the Swedish Agency for International Assistance.

TV EYES FOR GEOLOGISTS: In the U.S.A., geologists are using a set of two TV cameras to scan holes in the earth's crust drilled to depths of up to 5,000 feet. The set, designed by the Lawrence Radiation Laboratory of the University of California, has one camera which looks down the hole while the other views the sidewalls, enabling geologists to determine rock formations and mineral deposits.

URUGUAY'S SCIENCE FAIR: About 750 boys and girls from secondary schools in Uruguay entered models and projects in the country's first National Science Fair held in Montevideo and timed to coincide with an "Atoms at Work" exhibit organized in the capital. Entries covered all aspects of the natural sciences from astronomy to zoology, and included projects relating to space science, industry, cattle-raising and agriculture.

CARIBOU IN DANGER: Only 15 years ago men were taking as many as a million caribou a year in the Canadian arctic, to feed themselves and their dog teams. By 1955 the total number of caribou was estimated to have been reduced to a mere 278,000 as the numbers killed by far exceeded the number of calves born to the herds. Many Canadian conservationists regard the ultimate survival of the caribou as still in doubt, according to an article in "Canadian Audubon".

Flashes...

■ *Three million students in 7,500 elementary or secondary schools and many thousands in colleges in the United States are receiving part of their education through television, according to the Institute for Communications Research of Stanford University.*

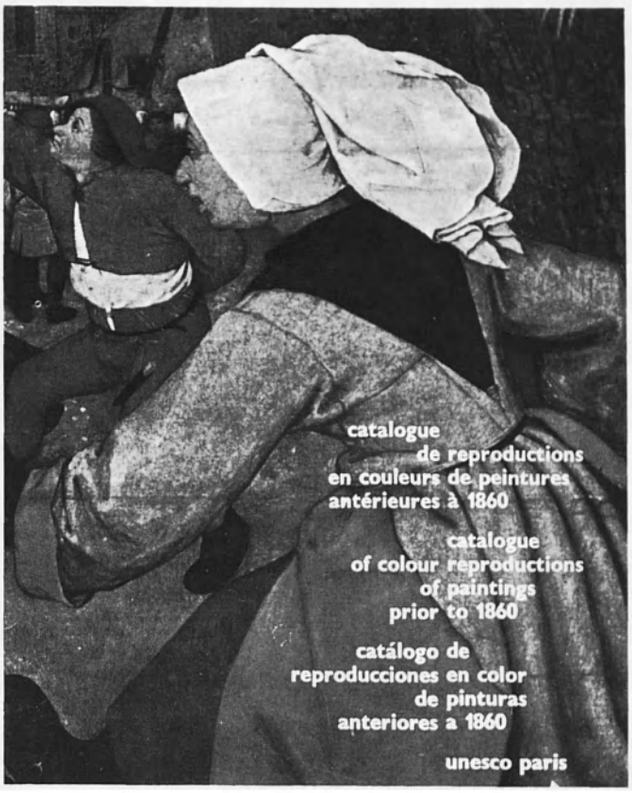
■ *More than eight million square kilometres of Africa is a danger zone for sleeping sickness reports WHO. This area is infested with 23 species and 13 subspecies of tsetse fly, the insect that transmits the diseases to animal and man.*

■ *More than one quarter of Mexico's budget—about 400 million dollars— will be devoted to education in 1964, when it is planned to build 12,500 literacy centres and to increase primary school enrolment by 260,000.*

■ *The floor of the Pacific Ocean is a vast dumping ground for chemicals and minerals, including nickel, copper, cobalt, phosphates and manganese produced by rivers, submarine volcanoes, disintegrating rocks etc., reports a University of California scientist, who estimates that there are 1,500,000 million tons of metal nodules waiting to be "mined".*

■ *The Government of West Pakistan plans to open 5,500 new primary schools by the end of the present school year. At least one thousand of these schools are destined for isolated areas.*

Imp. GEORGES LANG, PARIS. IMPRIMÉ EN FRANCE.



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CERAMIC ART FROM ANCIENT GREECE

Four steeds poised as though awaiting the charioteer's command decorate this 6th-century B.C. Greek amphor from the collection of Attic black-figured vases in the Metropolitan Museum of Art, New York. The design on the reverse side of this 16-inch high vessel shows Theseus killing the Minotaur. For other examples of these graceful ceramic masterpieces from ancient Greece see page 24.